rec'd Jan. 19. 1950

PSYCHE

A JOURNAL OF ENTOMOLOGY

ESTABLISHED IN 1874

VOL. 56 DECEMBER, 1949 No. 4

TABLE OF CONTENTS

New Species of Mecoptera from Northwest China. *F. Y. Cheng* 139

Seventy-fifth Anniversary of the Cambridge Entomological Club 174

Acanthepeira venusta (Banks) (Araneæ). *E. B. Bryant* 175

Further Description of *Polyplax alaskensis* Ewing (Anoplura). *W. B. Quay* 180

A New African Milliped Observed in Migration. *R. V. Chamberlin* 184

Some American Saldidæ (Hemiptera). *C. J. Drake* 187

Index to Volume 56 195

CAMBRIDGE ENTOMOLOGICAL CLUB

OFFICERS FOR 1949–50

President	F. G. WERNER
Vice President	W. L. NUTTING
Secretary	J. WOODLAND
Treasurer	F. M. CARPENTER
Executive Committee	B. I. GERRY S. K. HARRIS

EDITORIAL BOARD OF PSYCHE

F. M. CARPENTER—EDITOR
C. T. BRUES
P. J. DARLINGTON, JR.
J. BEQUAERT

PSYCHE is published quarterly, the issues appearing in March, June, September, and December. Subscription price, per year, payable in advance: $3.00 to Subscribers in the United States; Canadian and foreign subscriptions $3.35. Single copies, 85 cents.

Cheques and remittances should be addressed to Treasurer, Cambridge Entomological Club, Biological Laboratories, Harvard University, Cambridge, Mass.

Orders for back volumes, missing numbers, notices of change of address, etc., should be sent to the Editorial Office of Psyche, Biological Laboratories, Harvard University, Cambridge, Mass.

IMPORTANT NOTICE TO CONTRIBUTORS

Manuscripts intended for publication, books intended for review, and other editorial matter, should be addressed to Professor F. M. Carpenter, Biological Laboratories, Harvard University, Cambridge, Mass.

Authors contributing articles over 8 printed pages in length will be required to bear a part of the extra expense, for additional pages. This expense will be that of typesetting only, which is about $2.75 per page. The actual cost of preparing cuts for all illustrations must be borne by contributors; the expense for full page plates from line drawings is approximately $5.00 each, and for full page half-tones, $7.50 each; smaller sizes in proportion.

AUTHOR'S SEPARATES

Reprints of articles may be secured by authors, if they are ordered before, or at the time proofs are received for corrections. The cost of these will be furnished by the Editor on application.

The September, 1949, PSYCHE (Vol. 56, No. 3) was mailed October 31, 1949.

BUSINESS PRESS, INC., LANCASTER, PA.

PSYCHE

VOL. 56 DECEMBER, 1949 NO. 4

NEW SPECIES OF MECOPTERA FROM NORTHWEST CHINA[1]

BY FUNG YING CHENG

Taiwan Agricultural Research Institute

The Mecoptera or scorpion flies described in the present paper were mostly collected by Prof. Io Chou, Mr. Tien Ho Hei and the writer in Sikang Province during the course of an insect pest survey for the scientific expedition of the Sino-British Committee in 1939. Other specimens were sent to me by Prof. Io Chou, Mr. Chuan Lung Lee and Mr. Chia Chu Tao, to whom I am deeply indebted. In this paper, seventeen new species are described, including one previously identified by Dr. Tjeder as *cornigera.*

In describing the new species, I have followed the terminology of R. E. Snodgrass in his "Principles of Insect Morphology" (1935) and F. M. Carpenter in his "Revision of the Nearctic Mecoptera" (Bull. Mus. Comp. Zool. 1931, **72**: 205–277), viz., coxopodites ("basistyles"), harpagones ("dististyles"), hypandrium ("lower appendage"), hypovalvæ (branch of hypandrium), preëpiproct ("upper appendage or epiandrium"), parameres ("ventral valves or tittilators") and ædeagus ("dorsal valves") for the males, and subgenital plate and internal skeleton for the females.

---

[1] Contribution from the Department of Economic Zoology, Taiwan Agricultural Research Institute, published with the approval of the Director of the Institute and with a grant from the Museum of Comparative Zoology at Harvard College.

I wish to express my sincere thanks to Prof. S. F. Chiu of National Peking University and Prof. S. Issiki of National Taiwan University for their encouragement during the course of my study; and to Prof. F. M. Carpenter of Harvard University for his kindness in reading over this paper.

FAMILY PANORPIDÆ

Genus *Panorpa* Linn.

This genus is represented in China (not including Formosa) by 17 species, which may be grouped into three categories on the structure of the 6th abdominal segment of the male, as shown by Carpenter. In the first or *centralis* group, with a single anal horn, we have *centralis* Tjeder and *flavipennis* Carpenter; in the second or *diceras* group, with the double anal horn, we have *diceras* McLachlan, *tjederi* Carpenter, *stotzneri* Esben-Petersen and *kimminsi* Carpenter; in the third or *davidi* group, without the anal horn, we have a great number of species, i.e., *davidi* Navas, *stigmalis* Navas, *cladocerca* Navas, *tetrazonia* Navas, *waongkehzeni* Navas, *tincta* Navas, *japonica* Thunberg, *curva* Carpenter and *difficilis* Carpenter. Two other species, *guttata* Navas and *bonis* Cheng are known only from the female, so that the position of these two species in the above grouping has yet to be determined.

Panorpa emarginata n. sp.

Figures 1, 11, 12, 24, 26, 29

Vertex entirely black; rostrum grayish brown anteriorly, yellowish brown laterally; thorax yellowish brown laterally, pronotum blackish brown, meso- and metanotum entirely pitchy black; the 1st to 6th abdominal segments pitchy black dorsally and ventrally, last few abdominal segments yellowish brown; 6th abdominal segment of male with a single anal horn, yellowish brown in color. Fore wing: length, 14 mm.; width, 3.5 mm.; membrane hyaline, without markings except for a slight suspicion of gray at the apex; pterostigma prominent, indicated by light brown color; the distal hind margin of wings slightly emarginated. Hind wing: length, 12.5 mm.; width, 3.5 mm.; similar to fore wings. ♂ genitalia: genital bulb less rounded; coxopodites long, broadened towards its apex; harpagones short, the outer margin very slightly concave at the middle the inner margin with a median small triangular tooth and a large basal concave area; hypandrium inconspicuous; hypovalvæ long, with slightly concave median outer margins, extending nearly to the base of the harpagones; parameres simple and long, usually reaching to the distal part of harpagones, each consisting of a single stalk, which broadens at the middle, and each very long and sharp distally, bearing a series of long barbs at its distal inner margin; preëpiproct narrow towards the apex, with nearly straight sides and a narrow U-shaped distal incision; ædeagus with very long apical processes and well prolonged lateral processes, the distal inner margin of the former usually jointed with a broad triangular plate. ♀ genitalia: subgenital plate elongated, emarginated posteriorly, the incision being very small; internal skeleton large, the plate concave at its median sides with a pair of sharp distal posterior arms and two pairs of small basal side plates, the axis straight, extending beyond the plate nearly one-fourth its length.

Holotype (♂): Mt. Hwa, Shensi; June, 1942; Io Chou; in the Museum of Comparative Zoology. *Allotype* (♀): Same collecting data as holotype; in my own collection. *Paratypes:* 3 ♂, 4 ♀, same collecting data as holotype; in National Northwest College of Agriculture, Wukung, Shensi.

This species, possessing a single anal horn, belongs to the *centralis*-group, with the wing membrane transparent as in *centralis* Tjeder. The wing apex of *centralis* Tjeder is colorless, whereas that of *emarginata* is maculated with a slight suspicion of gray. The male genitalia differ from those of *centralis* Tjeder by the less rounded genital bulb and the longer and sharper parameres.

Panorpa obtusa n. sp.

Figures 2, 25, 27, 30

Vertex entirely black; rostrum reddish brown, with weakly defined grayish stripe on each side; thorax reddish brown laterally, entirely black dorsally; the 1st to 6th abdominal segments black dorsally and ventrally, last few abdominal segments of male reddish brown, the hind border of the third tergite of male prolonged into a small semicircular process, 6th abdominal segment furnished with a single anal horn, reddish brown in color. Fore wing: length, 14 mm.; width, 3.55 mm.; membrane light grayish brown, without markings except for a slight suspicion of grayish brown at the apex; pterostigma prominent, indicated by grayish brown color; the wing apex obtuse, broader than in the preceding species. Hind wing: length, 13 mm.; width, 3.5 mm.; similar to fore wing. ♂ genitalia: genital bulb rounded, coxopodites long; harpagones short and stout, the outer margin smoothly curved, the inner margin with a greatly reduced median tooth which cannot be seen from ventral view and a large basal concave area; hypandrium inconspicuous; hypovalvæ rather straight, reaching nearly to the base of the harpagones; parameres simple and stout, usually not extending beyond the tips of coxopodites, each consisting of a single spindle-shaped stalk, formed by the outer strongly sclerotized part; the distal inner margins of parameres furnished with a series of long barbs; preëpiproct slightly narrow towards the apex, with a wide U-shaped distal incision; ædeagus with small lateral processes and a pair of long apical processes, the inner margins of the latter nearly parallel to each other.

♀ unknown.

Holotype (♂): Mt. Taipai, Shensi; July 14, 1943; Chuan Lung Lee; in my own collection.

This species belongs to the *centralis* group, having the same wing marking as the preceding species, but the body color and the structure of male genitalia, especially the short parameres, make its recognition easy.

Panorpa typicoides n. sp.

Figures 3, 13, 14, 28, 31

Body mostly black; vertex black anteriorly, brown posteriorly; rostrum entirely brown; thorax black dorsally, yellowish brown laterally, meso- and meta-notum as a rule with a broad brown median band; 1st to 6th abdominal segments of male black dorsally and ventrally, last few abdominal segments reddish brown, anal horn absent; the hind border of third tergite slightly prolonged behind, and in contact with the small, sharp conical production on the median axis of the fourth tergite; abdominal segments of female entirely black. Fore wing: length, 12.5 mm.; width, 3 mm.; membrane hyaline, markings sooty brown; pterostigmal band complete, with a broad basal branch and a separated narrow apical branch; basal band interrupted, represented by two large spots; apical band broad, with a large hyaline spot posteriorly; basal spot very small; marginal spot large, not extending beyond the vein R1; pterostigma brown, very prominent. Hind wing: length, 11.5 mm.; width, 3.3 mm.; similar to fore wings, except that the basal spot and the anterior part of the basal band are entirely lacking. ♂ genitalia: genital bulb rounded; coxopodites long, U-shaped, furnished with a series of long hairs at the distal inner portions; harpagones slender, the outer margin slightly concave at the middle, the inner margin with a median angle and a small basal concave area; hypandrium inconspicuous; hypovalvæ rather long, reaching to the base of the harpagones; parameres simple and slender, each consisting of a single stalk, which is distinctly twisted and pointed at its apex; preëpiproct slender, slightly narrow towards apex, with a deep U-shaped distal incision; ædeagus with finger-shaped apical processes and slightly prolonged lateral processes, the distal inner margins of the former usually produced inwards to form a small nipple-shaped plate. ♀ genitalia: subgenital plate elongated, broadened at the middle; internal skeleton long, the plate narrow towards its base with a pair of sharp posterior arms, the axis very long, extending nearly two-thirds its length beyond the plate.

Holotype (♂): Tachienlu, 5000-8500 ft., Sikang; Aug. 27, 1939; F. Y. Cheng, Io Chou and Tein Ho Hei; in the Museum of Comparative Zoology. *Allotype* (♀): Same collecting data as holotype, in my own collection. *Paratype:* 1 ♂, same collecting data as holotype, in my own collection.

This species, belonging to the *davidi* group, is a very interesting one, superficially resembling the common European species *communis;* but the peculiar shape of the genital segments both in male and female makes it easily recognized as a distinct species.

Panorpa fructa n. sp.

Figures 5, 6, 7,

Body mostly sooty black, last few abdominal segments of male reddish brown, vertex black anteriorly, deeply reddish brown posteriorly; rostrum uniformly reddish brown. Fore wing: length, 11.5 mm.; width, 3 mm.; membrane hyaline, markings light brown, ill-defined, fragmentary; pterostigmal band incomplete, with a spot-like basal branch; basal band represented by two spots; apical band appears as a light suspicion of brown at the apex; basal spot very small; marginal spots large; pterostigma not very prominent. Hind wing: length, unknown; width, 3 mm.; similar to fore wing, except that basal band and basal spot are entirely absent. ♂ genitalia: genital bulb very rounded; coxopodites long, stout, with four spine-like hairs and a series of short hairs in its distal inner portions; harpagones slender, the outer margin rather straight, the inner margin with a median angle and a rather large basal concave area; hypandrium inconspicuous; hypovalvæ shorter than in the preceding species, far from reaching to the base of the harpagones; parameres simple, long and twisted, the distal half well-developed, with rounded apex furnished with a short spine-like tip; preëpiproct rather short, broad at the base, narrow towards apex, with a broad U-shaped distal incision;

ædeagus with long apical processes and long lateral processes, the former with rather straight inner margins and double sinuous outer margins.

♀ unknown.

Holotype (♂): Wakiakeng, 50 miles west of Tachienlu, Sikang; Sept. 9, 1939; F. Y. Cheng, Io Chou and Tein Ho Hei; in my own collection.

This species belongs to the *davidi* group, and resembles that species superficially, but differs in the broader genital bulb and especially in the well-developed distal part of the parameres and in the shape of the ædeagus.

Panorpa sexspinosa n. sp.

Figures 4, 8, 9, 15, 16

Vertex yellowish brown, with four dark spots on its anterior region, one small spot enclosing the median ocelli anteriorly, one around the other two ocelli posteriorly, the other two are on both sides of the former two spots; rostrum uniformly yellowish brown; thorax blackish brown dorsally, light yellow laterally, meso- and meta-notum as a rule with broad median light yellowish streaks; abdominal segments dark brown dorsally, light brown ventrally, hind part of 6th abdominal segment of male and its last few abdominal segments yellowish brown, the hind border of the third tergite with a band-like prolongation. Fore wing: length, 12 mm.; width, 3 mm.; membrane hyaline, markings darkish brown; pterostigmal band complete, with a broad basal branch and a narrow apical branch; basal band unusually broad; apical band complete, with a hyaline spot; basal spot very small; pterostigma not very prominent. Hind wing: length, 10.8 mm.; width, 3 mm.; similar to fore wing, except that the small basal spot is lacking. ♂ genitalia: genital bulb rounded; coxopodites long, with six spines on its distal inner margins; harpagones slender, the outer margin smoothly curved, the inner margin with a reduced median angle and a large basal concave area; hypandrium inconspicuous; hypovalvæ rather short, not nearly reaching to the base of the harpagones; parameres narrow and slender, each consisting of a single stalk which is somewhat twisted and pointed at its tip; preëpiproct slender, the distal incision being almost quadrate; apical processes of ædeagus somewhat prolonged on its distal outer margins, lateral processes well-developed. ♀ genitalia: subgenital plate elongated, slightly emarginate posteriorly; internal skeleton large, the plate distinctly concave at its base, with a pair of sharp posterior arms and a pair of anterior side plates; axis well-developed, extending beyond the plate for nearly one-third its length.

Holotype (♂): Mt. Taipai, Shensi, June, 1942; Io Chou; in my own collection. *Allotype* (♀): Same collecting data as holotype; in the Museum of Comparative Zoology. *Paratype:* 1 ♀, same collecting data as holotype; in my own collection.

This species, belonging to the *davidi* group, differs from the others in its wing markings; the basal band is as broad as in *cladocerca* Navas, but its pterostigmal band is quite different. The structure of male genitalia, especially the six spines on the distal coxopodites, makes its recognition easy.

Panorpa semifasciata n. sp.

Figures 19, 20, 21, 53

Body entirely sooty black; vertex black; rostrum uniformly black; the middle part of 8th abdominal tergite slightly prolonged into a band-like prolongation, the 9th abdominal tergite very broad, its lateral borders bent ventrad to embrace the posterior part of subgenital plate in ventral view. Fore wing: length, 14 mm.; width, 3.5 mm.; membrane light yellow, markings sooty brown; pterostigmal band incomplete, with an interrupted narrow basal branch; apical band small, with two hyaline spots; pterostigma prominent. Hind wing: length, 12.8 mm.; width, 3 mm.; similar to fore wing, except that the basal branch of pterostigmal band is greatly reduced. ♀ genitalia: subgenital plate broad, with strongly sclerotized median part and less sclerotized lateral borders, apex of subgenital plate rounded, less sclerotized, furnished with several long hairs; internal skeleton flattened, the plate very small, less sclerotized, the posterior arms of the internal skeleton very long, sharp and strongly sclerotized, axis flattened, jointed with posterior arms and extending a little beyond the plate.

♂ unknown.

Holotype (♀): Jihti, 30 miles east of Tachienlu, Sikang; Sept. 1, 1939; F. Y. Cheng, Io Chou and Tein Ho Hei; in my own collection.

This species differs from all the formerly described species by its body color, reduced wing markings and the peculiar shape of the genital segment of female. The position of this species in the above grouping is not determined.

Panorpa leei n. sp.

Figures 17, 18, 54

Vertex black; rostrum reddish brown, with a short and deep brown stripe on each side of its upper portion; thorax black dorsally, yellowish brown laterally; 1st to 6th abdominal segments black dorsally and ventrally, the 7th to 9th abdominal segments very small, reddish brown. Fore wing: length, 14 mm.; width, 4 mm.; membrane hyaline, markings sooty brown; pterostigmal band broad, with a complete basal branch, and a greatly reduced spot-shaped apical branch; apical band small, including a prominent narrow band and some faintly smoky spots; pterostigma prominent. Hind wing: length, 13 mm.; width, 3.55 mm.; similar to fore wing, except that the basal branch of pterostigmal band is greatly reduced. ♀ genitalia: subgenital plate small, narrowed posteriorly, apex rounded; internal skeleton long, the plate abruptly narrow at the base, with a pair of sharp posterior arms, the axis extending for nearly half its length beyond the plate.

♂ unknown.

Holotype (♀): Mt. Taipai, Shensi; July 14, 1943; Chuan Lung Lee; in the Museum of Comparative Zoology. *Para-*

type: 1 ♀ same collecting data as holotype; in my own collection.

The material was collected by Chuan Lung Lee, in honour of whom I name the species.

This species differs from all the formerly described species by its wing markings and the peculiar shape of the genital segment of the female. The position of this species in the above grouping is not determined.

Panorpa statura n. sp.

Figures 32, 33, 34, 57

Vertex dark brown anteriorly, with a black mark within the ocelli, light brown posteriorly, with a median and a pair of longitudinal bands; rostrum uniformly reddish brown; thorax entirely brown laterally, prothorax dark brown dorsally, meso- and meta-notum uniformly blackish brown; the 1st to 4th abdominal segments of the female blackish brown dorsally; brown ventrally, last few abdominal segments entirely brown. Fore wing: length, 16.5 mm.; width, 4.55 mm.; membrane yellowish brown, markings deep brown; pterostigmal band complete, with a broad basal branch and a broad apical branch; basal band interrupted; apical band large with a hyaline spot; marginal spot very small; pterostigma not very prominent. Hind wing: length, 15 mm.; width, 4.2 mm.; similar to fore wing, except that the small marginal spot is lacking. ♀ genitalia: subgenital plate elongated, narrowed posteriorly, shallowly emarginated at its apex, its lateral borders bent laterad to form a narrow lateral portion; internal skeleton long, the plate concave on its median sides with a pair of short tooth-like posterior arms, the axis long, extending beyond the plate for exactly half its length.

♂ unknown.

Holotype (♀): Mt. Taipai, Shensi; July 14, 1943; Chuan Lung Lee, in my own collection.

This species, having a yellowish brown wing membrane, differs from *flavipennis* Carpenter by its very long wing and the markings of the apical band. The peculiar shape of the genital segment of the female enables its easy recognition. The position of this species in the above grouping is not determined.

Panorpa pusilla n. sp.

Figures 37, 38, 52

Vertex yellow anteriorly with a black spot enclosing ocelli, sooty brown posteriorly with a median quadrangular plate; rostrum uniformly yellow; thorax brownish yellow dorsally, yellow laterally, meso- and meta-notum with sooty brown markings on each side; abdominal segments sooty brown dorsally, yellow laterally and ventrally. Fore wing: length, 1.8 mm.; width, 0.28 mm.; membrane yellow, markings sooty brown; pterostigmal band complete, with a complete basal branch and a separated apical branch; basal band complete; apical band represented by two prominent bands, the inner one narrow, being parallel to the pterostigmal band, the outer one including the wing apex; basal spot situated on the hind margin of wing; marginal spot very large; pterostigma not very prominent. Hind wing: length, 0.95 mm.; width, 0.28 mm.; similar to fore wing, except that the basal spot on the hind margin of wing is entirely lacking. ♀ genitalia: subgenital plate elliptical, with a slightly distal emargination; the plate of internal skeleton small, the posterior arms of the plate large, twisted at the middle, the axis short and slender, not extending beyond the plate.

♂ unknown.

Holotype (♀): Mt. Taipai, Shensi, June, 1942; Io Chou; in the Museum of Comparative Zoology. *Paratype:* 1 ♀, same collecting data as holotype; in my own collection.

This species, having yellowish wing membrane differs, from the other described species by its very small body size, wing markings and the peculiar shape of the genital segment of the female. The position of this species in the above grouping is not determined.

Panorpa bonis n. sp.

Panorpa cornigera Tjeder (nec McLachlan) Ark. Zool., Bd. 27A, no. 33, p. 7 (1935).

The female of this species, which has been well described and figured by Tjeder, resembles *cornigera,* but I am convinced that it is a distinct species. This is also the opinion of Dr. Issiki, who has collected many individuals of the true *cornigera* in Korea and East Siberia. I am, therefore, describing here as new the species identified as *cornigera* by Tjeder.

The "additional side plates" of 7th–8th abdominal segments of this species are not so slender as those of *cornigera.* The subgenital plate is pointed at its posterior part, and shallowly emarginate at its apex, while that of *cornigera* is rounded and not emarginate. The internal skeleton of this species is quite distinct from that of *cornigera:* the plate of the former is slender with a small proximal part and short blunt posterior arms; while that of the latter is broad, with a well-developed oval proximal part and long pointed posterior arms. The axis of this species extending beyond the plate is less than half the length of the whole axis, while that of *cornigera* usually extends beyond the plate more than half its length.

♂ unknown.

Holotype (♀): Lupasze, at River Tao Ho, South Kansu, about 2.750 m.; July 11, 1930; Dr. D. Hummel; in the Stockholm Museum.

The position of this species in the above grouping is not determined.

Genus *Neopanorpa* Weele

This genus has heretofore been represented in China (not including Formosa) by ten species, of which *apicata, cavelcriei, dimidiata, lacunaris, pielina* and *brisi* were described by Navas; and *claripennis, nigritis, chelata* and *banksi* by Carpenter.

In this paper six species are described as new, of which *validipennis* and *taoi* have undeveloped parameres, and *choui* bears a large internal skeleton with a well-developed axis.

Neopanorpa choui n. sp.

Figures 22, 23, 43, 44, 45, 62

Body light brown, the middle part of the thoracic notum sooty brown; vertex entirely black; rostrum yellowish brown; median process of third abdominal tergite of male extraordinarily long (measuring up to 4.2 mm.) apparently divided into two portions and bearing a series of dense, short stiff hairs on its ventral surface; the fourth tergite extremely long, almost covering the following abdominal segments, somewhat elevated, and furnished with many short stiff hairs on its surface. Fore wing: length, 3.5 mm.; width, 3 mm.; membrane light yellowish brown, markings light brown, very indistinct; pterostigmal band incomplete, usually represented only by the faint basal branch and apical branch; basal band represented only by two small spots on the hind margin; apical band large; pterostigma brown, very prominent. Hind wing: length, 12 mm.; width, 3 mm.; similar to fore wing, except that the pterostigmal band and the basal are entirely lacking. ♂ genitalia: genital bulb slender; coxopodite long, with truncated apex; harpagones slender, the outer margin concave at the middle, inner margin with a triangular angle and a large basal lobe; hypandrium short and broad; hypovalvæ broad and less sclerotized, with an abruptly narrow apex, extending beyond the base of the harpagones; parameres modified into a pair of sclerotized rods, greatly swollen distally and with an incised apex and fused with the basal part of ædeagus basally; preëpiproct narrow distally with truncated and slightly concave apex. Ædeagus rather small, the two apical processes united together; lateral process extending upward with tooth-like apex. ♀ genitalia: subgenital plate broad basally, narrow towards apex and with a narrow U-shaped incision distally; internal skeleton large, the plate little sclerotized, very small, its posterior arms narrow and slender, sword-shaped, the axis very stout with abruptly curved hook-shaped basal ends.

Holotype (♂): Mt. Chowkung, Yaan, Sikang; July 14, 1939; F. Y. Cheng, Io Chou and Tein Ho Hei; in my own collection. *Allotype* (♀): Same collecting data as holotype; in my own collection. *Paratypes:* 1 ♀, same collecting data as holotype; in the Museum of Comparative Zoology; 2 ♀, same collecting data as holotype; in my own collection.

I take the liberty of naming this species in honour of Prof. Io Chou, of the National Northwest College of Agriculture, who was so kind to me during our expedition.

This species differs from other described *Neopanorpa* by its very long median process of the third abdominal segment and the peculiar structures of both male and female genitalia.

Neopanorpa heii n. sp.

Figures 35, 36, 49, 50, 51

Vertex entirely black; rostrum uniformly brown; thorax sooty brown dorsally, deep brown laterally; the 1st to 5th abdominal segments of male sooty brown dorsally, deep brown laterally and ventrally, 6th abdominal segment twice the length of 5th segment, sooty brown in color, last three abdominal segments also very long, deep brown in color; median process of the third tergite short, never extending to the middle of the fourth tergite, and in contact with the conical projection on the median axis of the fourth tergite; abdominal segments of female sooty brown dorsally, deep brown laterally and ventrally. Fore wing: length, ♂ 12.8 mm.; ♀ 13.5 mm.; width, ♂ 3.2 mm.; ♀ 3 mm.; membrane slightly brown, markings sooty brown; pterostigmal band complete, with a broad basal branch and a greatly reduced and separated apical branch; basal band represented by a reduced marking on the hind margin; apical band well-developed; basal spot very small; marginal spot consisting of two reduced spots; pterostigma prominent. Hind wing: length, ♂ 11.5 mm.; ♀ 12.2 mm.; width, ♂ 3.2 mm.; ♀ 3 mm.; similar to fore wing, except that apical branch of pterostigmal band, basal band, basal spot and marginal spot are entirely lacking. ♂ genitalia: genital bulb slender; coxopodites rather long, with a projecting apex; harpagones very slender, the outer margin slightly concave at the middle, inner margin with a smooth angle and a true basal lobe; hypandrium rather long; hypovalvæ not flattened, broadened towards the apex, the basal portion wide apart, the median inner parts greatly prolonged upward and overlapping each other; parameres apparently absent; preëpiproct slightly narrow towards the apex, the distal portion bent laterad and caudad so as to embrace the proctiger; ædeagus very small, both the apical and the lateral processes tooth-like, the basal part usually covered by a pair of elliptical membranous plates. ♀ genitalia: subgenital plate broad, with a wide U-shaped distal incision; internal skeleton small, the plate being band-shaped, transversely elongated, the posterior arms of the internal skeleton lanceolate, extending laterad and reaching to the side margins of the subgenital plate, the axis small, fork-shaped, the distal portions of the forks jointed with the basal posterior arms closely.

Holotype (♂): Mt. Chowkung, Yaan, Sikang; July 29, 1939, F. Y. Cheng, Io Chou and Tein Ho Hei; in my own collection. *Allotype* (♀): Same collecting data as holotype, in my own collection.

I take the liberty of naming this species in honour of Mr. Tein Ho Hei, who was so kind to me during our expedition.

This species superficially resembles *caveleriei* Navas in wing markings, but it can be distinguished by the greatly reduced apical branch of the pterostigmal band in the fore wing and the entire lack of this band in the hind wing. Another difference is the unforked R2a of this species as compared with the forked R2a in the redescribed figure of *caveleriei* Navas by Esben-Petersen (1921, p. 83). However, the specific characteristics cannot be determined for certain until the structure of the 9th abdominal segment has been studied. This species also resembles *chelata* Carp. in wing markings but these two species are at once distinguished by the forms of both male and female genitalia.

Neopanorpa validipennis n. sp.

Figures 46, 47, 48, 64, 65

Vertex entirely black; rostrum deep brown, with a median longitudinal light brown streak; thorax sooty brown dorsally, brown laterally, the 1st to 5th abdominal segments of male dark brown dorsally, reddish brown ventrally, 6th segment long, sooty brown, 7th segment reddish brown, 8th segment reddish brown anteriorly, sooty brown posteriorly, both the 7th and 8th segments broaden towards apex, the posterior end of the pleural regions of 7th segment protruding posteriorly to form two small processes, median process of the third tergite rather long, extending nearly to the hind border of the fourth tergite, pointed at the apex when seen dorsally. Under this median process, there is another reddish small process, and on both sides of this median process is a pair of small tooth-like prolongations, the median axis of the fourth tergite slightly protruding upward. Fore wing: length, 14.5 mm.; width, 3.5 mm.; membrane grayish brown, no markings present; veins very stout, R2a usually forked into R2a1 and R2a2; pterostigma not very prominent. Hind wing: length, 13.5 mm.; width, 3.5 mm.; similar to fore wing. ♂ genitalia: genital bulb slender; coxopodites very long, abruptly narrow distally, bearing a number of long hairs on the distal inner margins; harpagones short and slender, the outer margin slightly concave at the middle, furnished with a series of short barbs at the basal half, inner margin with a large lobe basally; hypandrium long, slightly narrow towards apex; hypovalvæ with slender basal stalks, wide apart basally, overlapping each other, the outer borders extending laterad and concave near its middle; parameres club-shaped with rounded apex; preëpiproct slender with rounded apex, the distal outer portion extended laterad to embrace the proctiger, and forming distal tooth-like processes; ædeagus very small, the two apical processes nearly united, lateral processes extended posteriorly, sharp and tooth-like.

♀ unknown.

Holotype (♂): Jihti, 30 miles east of Tachienlu, Sikang; Sept. 2, 1939; F. Y. Cheng, Io Chou and Tein Ho Hei; in my own collection.

This species resembles *claripennis* Carp. and *nigritis* Carp. in lacking color markings of wings, but the form of the male genitalia makes its recognition easy.

Neopanorpa taoi n. sp.

Figures 10, 58, 66, 68

Body light brown; vertex entirely black; rostrum light brown with sooty brown stripe on each side; pronotum sooty brown, meso- and meta-notum sooty brown on the median portion; the 1st to 5th abdominal segments of male sooty brown dorsally, last few abdominal segments brown in color, median process of third abdominal tergite short with swollen and truncated apex, not extending beyond the middle of the fourth tergite. Under this process, there is a small median process and a pair of lateral processes; the fourth tergite is provided with a concave area on its anterior portion. Fore wing: length, 0.7 mm.; width, 3.8 mm.; membrane light gray, no markings present, R2a usually forked into R2a1 and R2a2; pterostigma prominent. Hind wing: length, 15.8 mm.; width, 3.8 mm.; similar to fore wing. ♂ genitalia: genital bulb slender; coxopodites long, narrow distally, bearing many long hairs; harpagones rather short, the outer margin convex basally, furnished with a series of short barbs at the middle, inner margin with a large basal lobe with two tooth-like processes, hypandrium broad, hypovalvæ wide apart basally, slightly overlapping each other distally, the basal outer margins greatly convex and strongly sclerotized, parameres simple, lanceolate; preëpiproct slender, with median concaved margins, the distal outer portions extended laterad, forming large, distal, tooth-like processes; ædeagus rather small, both apical processes and lateral processes tooth-like, extending the same direction and having nearly the same size.

♀ unknown.

Holotype (♂): Mt. Lo, Sichang; June 10, 1944, Chia Chu Tao; in my own collection.

The species is named in honour of Chia Chu Tao. It differs from the preceding one by the broadened apex of the median process of the 3rd abdominal segment and also by the structure of the male genitalia.

Neopanorpa latipennis n. sp.

Figures 39, 40, 55

Body deep brown, black above, vertex black anteriorly, brown posteriorly, with a sooty brown marking on the median portion; rostrum brown, with a sooty brown median stripe on its lower portion. Fore wing: length, 14 mm.; width, 3.53 mm.; membrane hyaline, markings sooty brown; pterostigmal band very broad, with broad basal branch and narrow apical branch, basal band not very prominent, extending to the median portion of the fore wing, apical band very large, represented by a big marking and an inner small Y-shaped band; marginal spots small; pterostigma prominent; the wing apex rather broad. Hind wing: length, 12.55 mm.; width, 3.5 mm.; similar to fore wing, except that the apical branch of pterostigmal band, the inner small Y-shaped band of apical band and the basal band are greatly reduced. ♀ genitalia: subgenital plate abruptly narrow posteriorly, with a wide U-shaped distal incision; internal skeleton small, being U-shaped, with a small stalk at its base, the axis apparently absent.

♂ unknown.

Holotype (♀): Moupin, Sikang; July 29, 1941; Chuan Lung Lee: in my own collection.

This species differs from described *Neopanorpa* by its additional small Y-shaped band between the pterostigmal and apical bands in the fore wings. The stalk bearing U-shaped internal skeleton of the female enables its easy recognition.

Neopanorpa varia n. sp.

Figures 41, 42, 56

Body light brown, black above, last few abdominal segments brown, vertex entirely black; rostrum light brown with black stripe on each side. Fore wing: length, 14 mm.; width, 3.2 mm.; membrane slightly brown, markings sooty brown; pterostigmal band complete, with a separated basal branch and a narrow apical branch; apical band complete; pterostigma prominent. Hind wing: length, 13 mm.; width, 3.3 mm.; similar to fore wing, except that the basal band is represented by a small marking on the hind margin. ♀ genitalia: subgenital plate broad, with a U-shaped distal incision; internal skeleton large, U-shaped, posterior arms rather long, obtuse distally, very large basally, with a narrow sclerotized bridge and a rounded membranous portion between them, axis apparently absent.

♂ unknown.

Holotype (♀): Heierhwan, 100 miles south of Tachienlu, Sikang; Sept. 20, 1939; F. Y. Cheng, Io Chou and Tein Ho Hei; in my own collection. *Paratypes:* 1 ♀ Jihti, 20 miles east of Tachienlu, Sikang; Sept. 2, 1939; 1 ♀ Tienwan, 30 miles south of Tachienlu, Sikang; Sept. 9, 1939; 1 ♀ Wantung, 50 miles south of Tachienlu, Sikang; Sept. 17, 1939; F. Y. Cheng, Io Chou and Tien Ho Hei; in my own collection.

This species is somewhat variable with regard to the markings of the wings; in my collection, there is one individual collected in Wantung, Sikang, with a greatly reduced pterostigmal band on both fore and hind wings and without the basal band on the hind wing.

This species resembles *chelata* Carp. in wing markings, but differs greatly in the structure of the female genitalia. The internal skeleton of this species resembles *banksi* Carp. superficially, but differs in its basal structure as compared with the three well-developed plates which appear on the base of the internal skeleton of *banksi* Carp. The wings of this species differ from those of *caveleriei* Navas by the absence of a transverse marking which joins the pterostigmal and apical bands at the anterior margin of the wing. The wings of this species resemble those of *dimidiata* Navas, but the body color differs very much. However, the specific characteristics cannot be determined with certainty until the structure of the 9th abdominal segment has been studied.

FAMILY BITTACIDÆ

Genus *Bittacus* Latr.

This genus has been represented in China (not including Formosa) by four species, of which *sinensis* was described by Walker, *pieli* by Navas, and *triangularis* and *sinicus* by Issiki.

Bittacus planus n. sp.

Figures 59, 60, 61, 63, 67

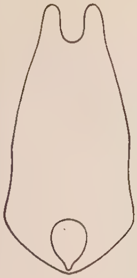
Body light brown, vertex brown, with sooty brown marking enclosing ocelli; rostrum brown; meso-thorax with two sooty brown spots on each side dorsally. Fore wing: length, 20.2 mm.; width, 5.2 mm.; the wing apex broad, obtuse; membrane light brown without markings, veins brown, cross veins slightly emarginated; pterostigma not very prominent, apical cross vein in the area between Cu2 and 1A absent. Hind wing: length, 17.5 mm.; width, 4.2 mm.; similar to fore wing, except that there is only one cross vein between the pterostigma and R2. ♂ genitalia: preëpiproct with V-shaped inner margins, when seen from above, with truncated apex, the apical margins being slightly concave, furnished with a series of short black bristles on its interior sides; caudal end of coxopodites produced upward rather long with smooth apex; harpagones broad basally, very narrow and slender distally, with prominent inner process; ædeagus lobes on each side of the base of filum broaden towards apex with truncated tips; proctiger narrow towards apex, furnished with a bundle of short hairs; the lower process very long, pointed towards its apex.

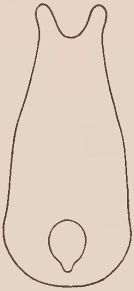
Holotype (♂): Mt. Taipai, Shensi, June, 1942; Io Chou; in my own collection. *Paratypes:* 1 ♂, 1 ♀, same collecting data as holotype; in the Museum of Comparative Zoology. 2 ♂, 3 ♀, same collecting data as holotype; in National Northwest College of Agriculture, Wukung, Shensi.

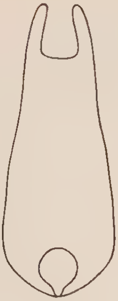
This species differs from the previously described species by the peculiar shape of the preëpiproct in lateral view, the slender harpagones and the broadened apex of the ædeagus lobes.

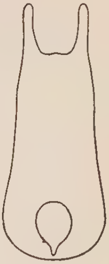
EXPLANATION OF PLATE 7

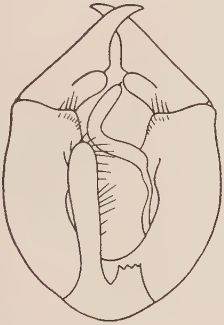
Fig. 1. *Panorpa emarginata* n. sp., preëpiproct of ♂. (Holotype).
Fig. 2. *Panorpa obtusa* n. sp., preëpiproct of ♂. (Holotype).
Fig. 3. *Panorpa typicoides* n. sp., preëpiproct of ♂. (Holotype).
Fig. 4. *Panorpa sexspinosa* n. sp., preëpiproct of ♂. (Holotype).
Fig. 5. *Panorpa fructa* n. sp., ventral view of ♂ genital bulb. (Holotype).
Fig. 6. *Panorpa fructa* n. sp., preëpiproct of ♂. (Holotype).
Fig. 7. *Panorpa fructa* n. sp., ventral view of ♂ genital bulb. (Holotype).
Fig. 8. *Panorpa sexspinosa* n. sp., ventral view of ♂ genital bulb. (Holotype).
Fig. 9. *Panorpa sexspinosa* n. sp., ventral view of ♂ genital bulb, showing ædeagus. (Holotype).
Fig. 10. *Neopanorpa taoi* n. sp., ventral view of ♂ genital bulb. (Holotype).

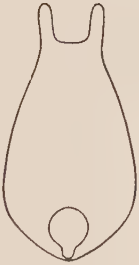

1

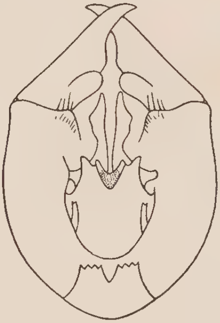

2

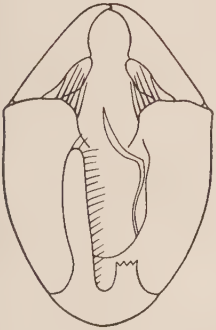

3

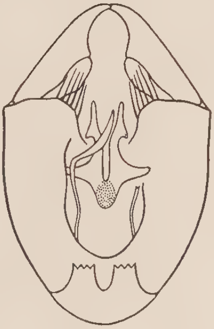

4

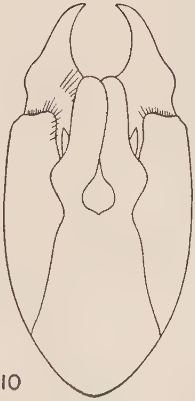

5


6


7


8

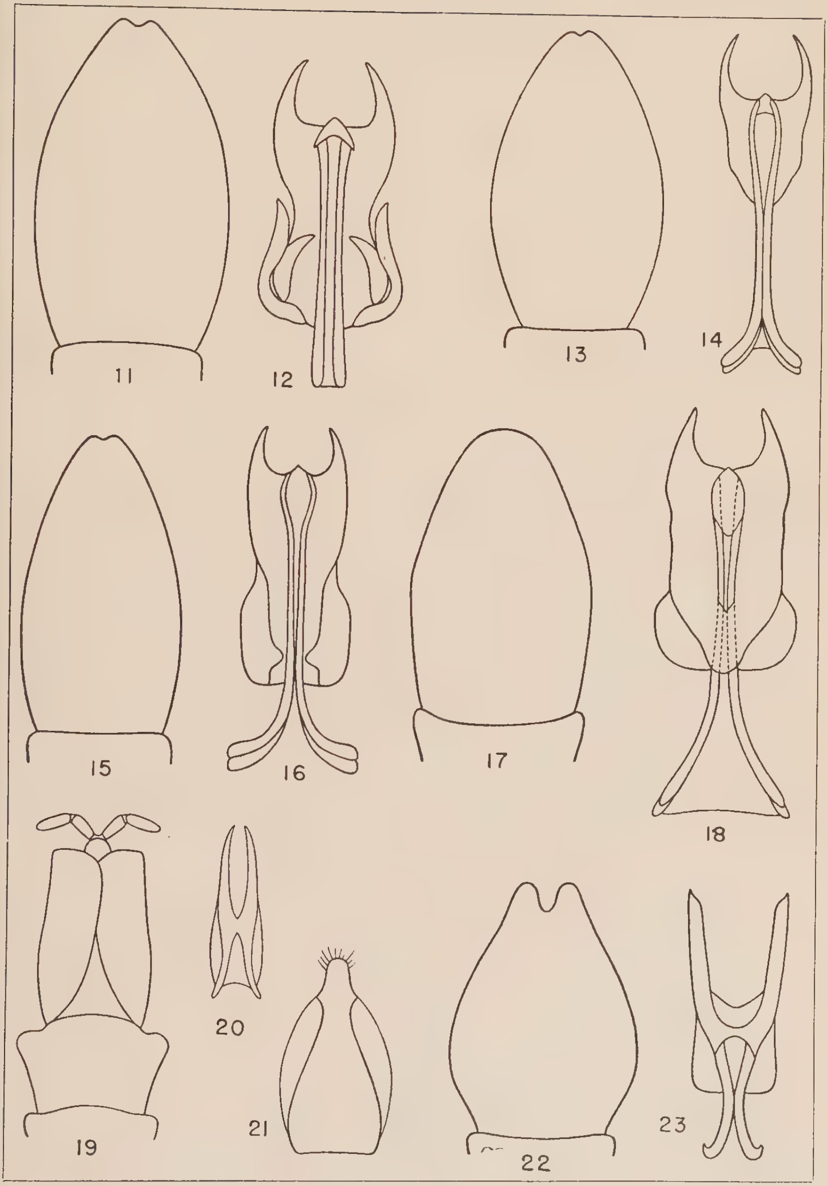

9


10

CHENG—MECOPTERA

EXPLANATION OF PLATE 8

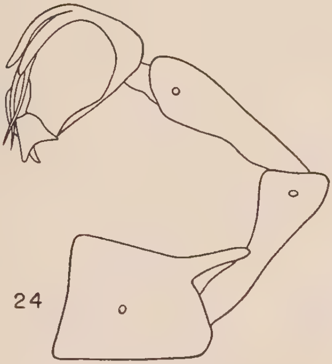
Fig. 11. *Panorpa emarginata* n. sp., subgenital plate of ♀. (Allotype).
Fig. 12. *Panorpa emarginata* n. sp., internal skeleton of ♀. (Allotype).
Fig. 13. *Panorpa typicoides* n. sp., subgenital plate of ♀. (Allotype).
Fig. 14. *Panorpa typicoides* n. sp., internal skeleton of ♀. (Allotype).
Fig. 15. *Panorpa sexspinosa* n. sp., subgenital plate of ♀. (Allotype).
Fig. 16. *Panorpa sexspinosa* n. sp., internal skeleton of ♀. (Allotype).
Fig. 17. *Panorpa leei* n. sp., subgenital plate of ♀. (Holotype).
Fig. 18. *Panorpa leei* n. sp., internal skeleton of ♀. (Holotype).
Fig. 19. *Panorpa semifasciata* n. sp., ventral view of ♀ last few abdominal segments. (Holotype).
Fig. 20. *Panorpa semifasciata* n. sp., internal skeleton of ♀. (Holotype).
Fig. 21. *Panorpa semifasciata* n. sp., subgenital plate of ♀. (Holotype).
Fig. 22. *Neopanorpa choui* n. sp., subgenital plate of ♀. (Allotype).
Fig. 23. *Neopanorpa choui* n. sp., internal skeleton of ♀. (Allotype).

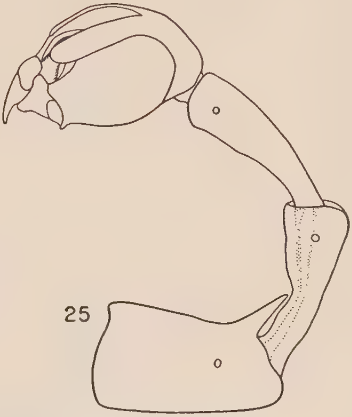


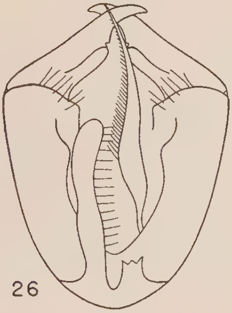
CHENG—MECOPTERA

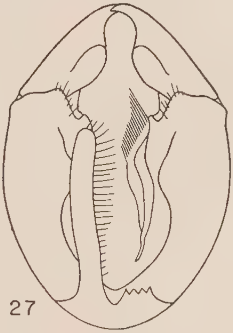
EXPLANATION OF PLATE 9

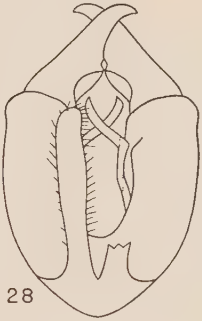
Fig. 24. *Panorpa emarginata* n. sp., lateral view of ♂ last few abdominal segments. (Holotype).
Fig. 25. *Panorpa obtusa* n. sp., lateral view of ♂ last few abdominal segments. (Holotype).
Fig. 26. *Panorpa emarginata* n. sp., ventral view of ♂ genital bulb. (Holotype).
Fig. 27. *Panorpa obtusa* n. sp., ventral view of ♂ genital bulb. (Holotype).
Fig. 28. *Panorpa typicoides* n. sp., ventral view of ♂ genital bulb. (Holotype).
Fig. 29. *Panorpa emarginata* n. sp., ventral view of ♂ genital bulb, showing ædeagus. (Holotype).
Fig. 30. *Panorpa obtusa* n. sp., ventral view of ♂ genital bulb, showing ædeagus. (Holotype).
Fig. 31. *Panorpa typicoides* n. sp., ventral view of ♂ genital bulb, showing ædeagus. (Holotype).

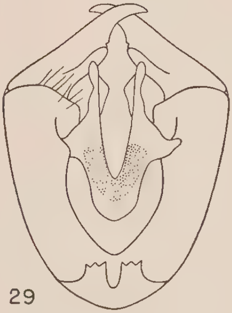

24

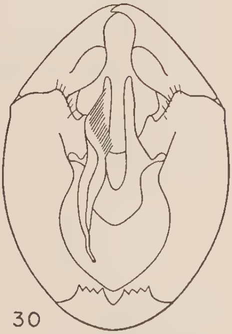

25

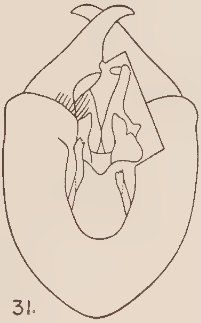

26


27


28


29

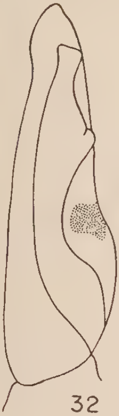

30

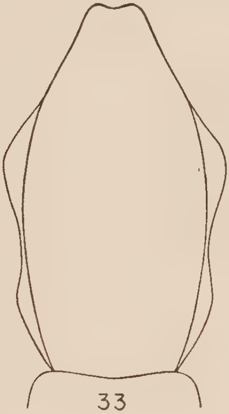

31.

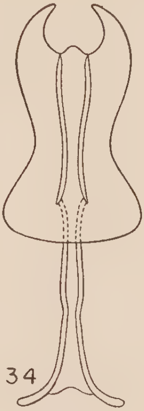
CHENG—MECOPTERA

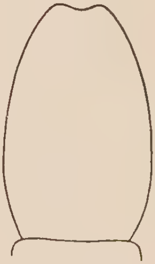
Explanation of Plate 10

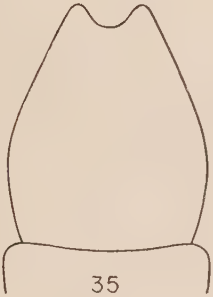
Fig. 32. *Panorpa statura* n. sp., lateral view of subgenital plate of ♀. (Holotype).
Fig. 33. *Panorpa statura* n. sp., subgenital plate of ♀. (Holotype).
Fig. 34. *Panorpa statura* n. sp., internal skeleton of ♀. (Holotype).
Fig. 35. *Neopanorpa heii* n. sp., subgenital plate of ♀. (Allotype).
Fig. 36. *Neopanorpa heii* n. sp., internal skeleton of ♀. (Allotype).
Fig. 37. *Panorpa pusilla* n. sp., subgenital plate of ♀. (Holotype).
Fig. 38. *Panorpa pusilla* n. sp., internal skeleton of ♀. (Holotype).
Fig. 39. *Neopanorpa latipennis* n. sp., subgenital plate of ♀. (Holotype).
Fig. 40. *Neopanorpa latipennis* n. sp., internal skeleton of ♀. (Holotype).
Fig. 41. *Neopanorpa varia* n. sp., subgenital plate of ♀. (Holotype).
Fig. 42. *Neopanorpa varia* n. sp., internal skeleton of ♀. (Holotype).

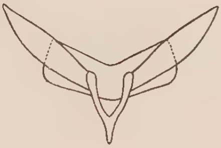

32

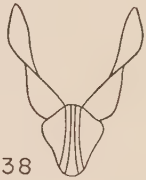

33

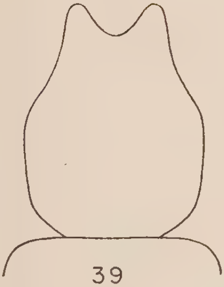

34

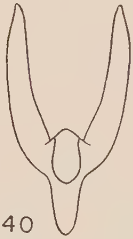

37

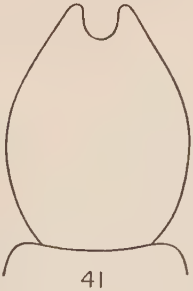

35

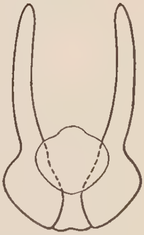

36


38


39


40


41


42

CHENG—MECOPTERA

EXPLANATION OF PLATE 11

Fig. 43. *Neopanorpa choui* n. sp., ventral view of ♂ genital bulb. (Holotype).

Fig. 44. *Neopanorpa choui* n. sp., preëpiproct of ♂. (Holotype).

Fig. 45. *Neopanorpa choui* n. sp., ventral view of genital bulb, showing ædeagus. (Holotype).

Fig. 46. *Neopanorpa validipennis* n. sp., ventral view of ♂ genital bulb, (Holotype).

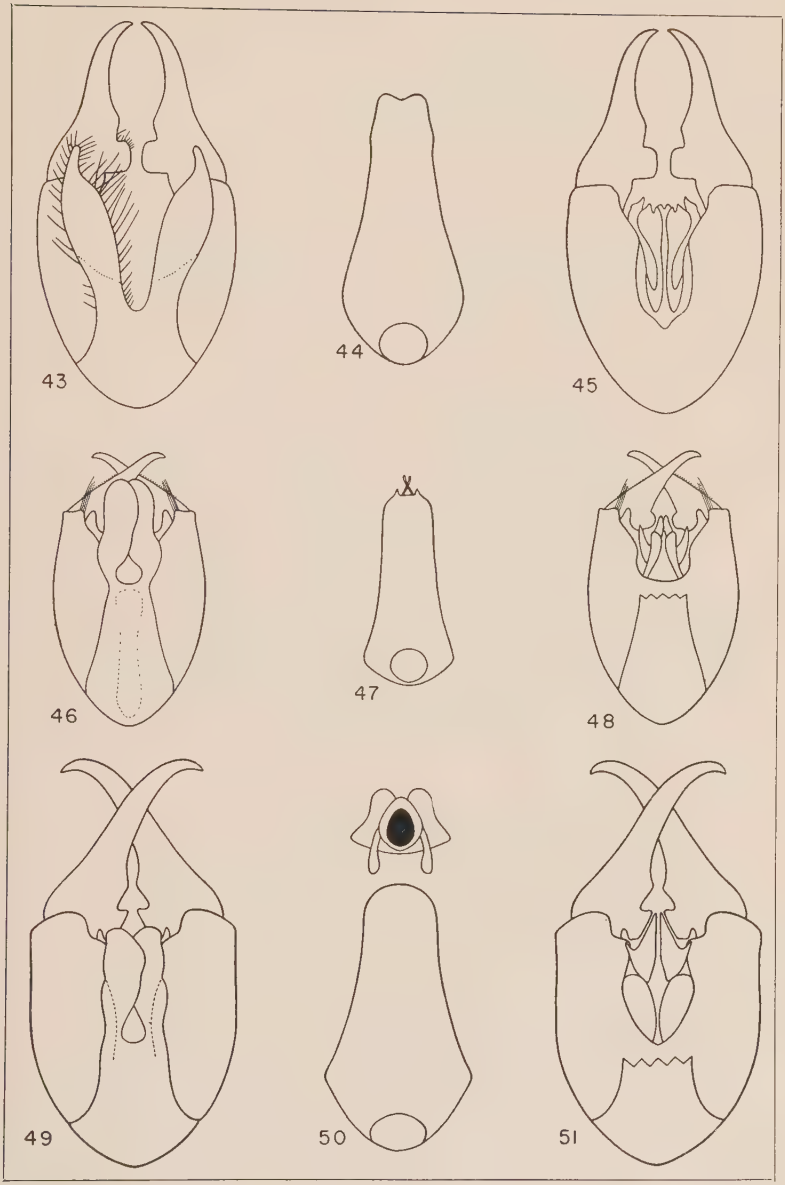
Fig. 47. *Neopanorpa validipennis* n. sp., preëpiproct of ♂. (Holotype).

Fig. 48. *Neopanorpa validipennis* n. sp., ventral view of ♂ genital bulb, showing ædeagus. (Holotype).

Fig. 49. *Neopanorpa heii* n. sp., ventral view of ♂ genital bulb. (Holotype).

Fig. 50. *Neopanorpa heii* n. sp., preëpiproct of ♂. (Holotype).

Fig. 51. *Neopanorpa heii* n. sp., ventral view of ♂ genital bulb, showing ædeagus. (Holotype).

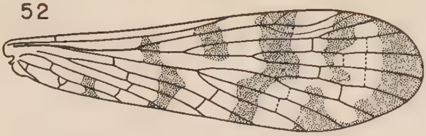


CHENG—MECOPTERA

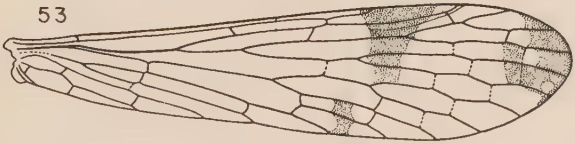
EXPLANATION OF PLATE 12

Fig. 52. *Panorpa pusilla* n. sp., fore wing of ♀. (Holotype).
Fig. 53. *Panorpa semifasciata* n. sp., fore wing of ♀. (Holotype).
Fig. 54. *Panorpa leei* n. sp., fore wing of ♀. (Holotype).
Fig. 55. *Neopanorpa latipennis* n. sp., fore wing of ♀. (Holotype).
Fig. 56. *Neopanorpa varia* n. sp., fore wing of ♀. (Holotype).
Fig. 57. *Panorpa statura* n. sp., fore wing of ♀. (Holotype).

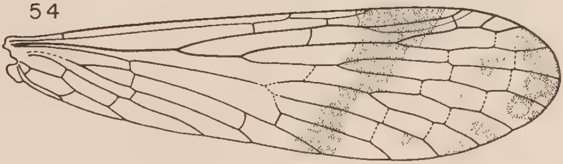
52



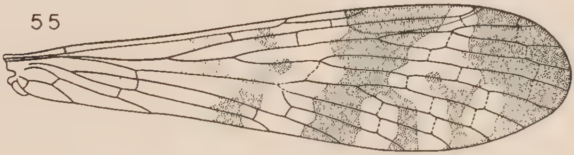
53



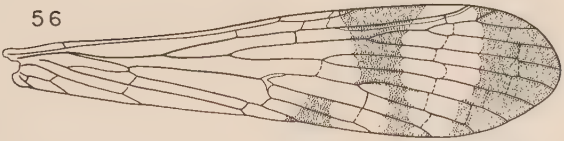
54



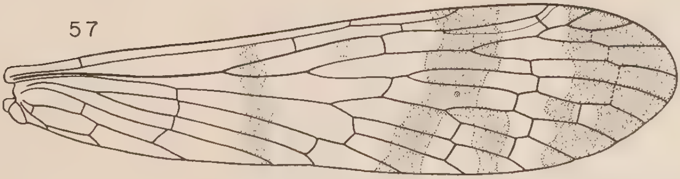
55



56



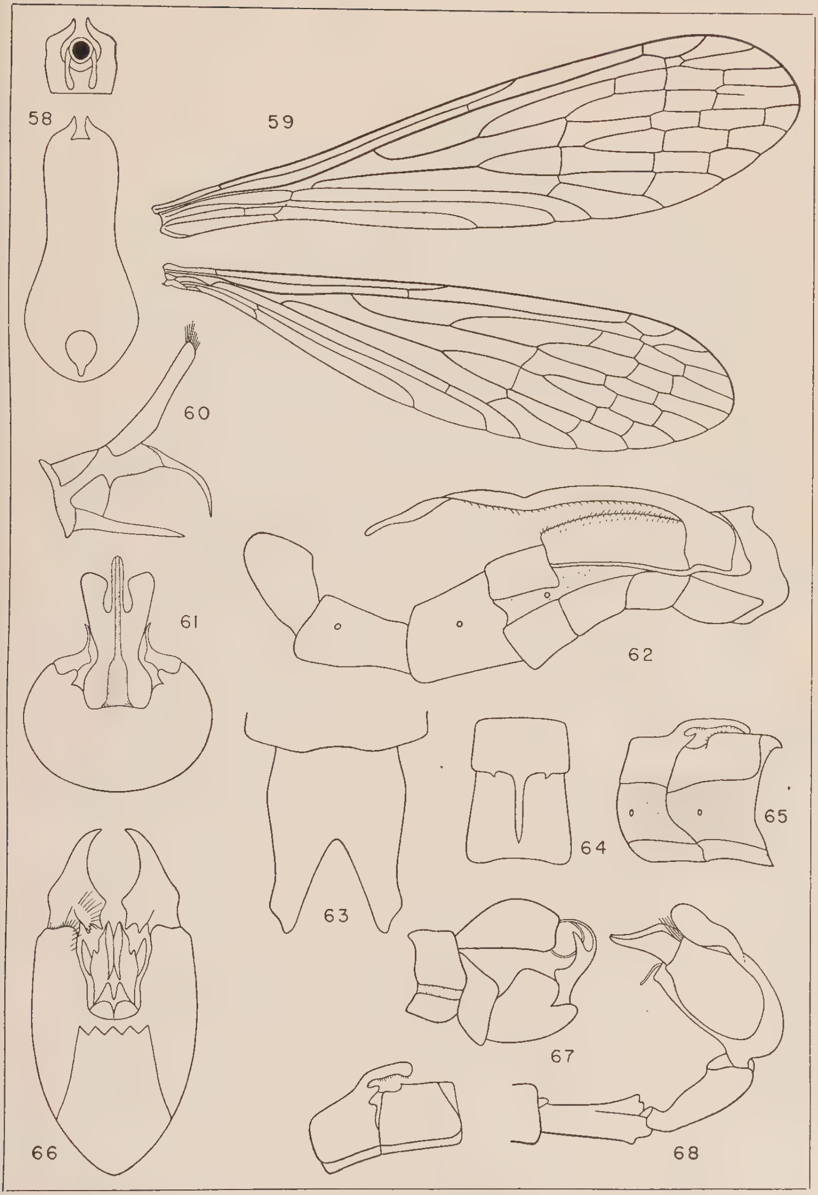
57



CHENG—MECOPTERA

EXPLANATION OF PLATE 13

Fig. 58. *Neopanorpa taoi* n. sp., preëpiproct of ♂. (Holotype).
Fig. 59. *Bittacus planus* n. sp., wings of ♂. (Holotype).
Fig. 60. *Bittacus planus* n. sp., terminal abdominal appendages, lateral view of the proctiger. (Holotype).
Fig. 61. *Bittacus planus* n. sp., terminal abdominal appendages, dorsal view. (Holotype).
Fig. 62. *Neopanorpa choui* n. sp., lateral view of ♂ abdominal segments, showing long median process. (Holotype).
Fig. 63. *Bittacus planus* n. sp., terminal abdominal appendages, caudal view. (Holotype).
Fig. 64. *Neopanorpa validipennis* n. sp., dorsal view of the median process of ♂. (Holotype).
Fig. 65. *Neopanorpa validipennis* n. sp., lateral view of the median process of ♂. (Holotype).
Fig. 66. *Neopanorpa taoi* n. sp., ventral view of ♂ genital bulb, showing ædeagus. (Holotype).
Fig. 67. *Bittacus planus* n. sp., terminal ♂ abdominal appendages, lateral view. (Holotype).
Fig. 68. *Neopanorpa taoi* n. sp., lateral view of abdominal segments of ♂. (Holotype).



CHENG—MECOPTERA

SEVENTY-FIFTH ANNIVERSARY OF THE CAMBRIDGE ENTOMOLOGICAL CLUB.—As this issue of Psyche goes to press, plans are being made for a 75th anniversary meeting of the Cambridge Entomological Club, on December 20, 1949. The Club was formed on January 9, 1874, by thirteen local entomologists, who met at Dr. Hagen's house. In addition to Hagen the group included Samuel Scudder, A. S. Packard, Samuel Henshaw, Edward Burgess, George Dimmock, J. H. Emerton, E. Schwarz, E. P. Austin, B. P. Mann, J. C. Munro, G. R. Crotch and H. R. Morrison. The first scientific communication of that evening was a discussion by Dr. Hagen of an amber insect from Maryland. At the fourth meeting, on April 10, 1874, the members voted to publish a monthly journal, named Psyche. Five hundred printed copies of the first issue were brought to the next meeting, on May 8. Within the next few years many well-known entomologists joined the Club, among them being H. R. Grote, Baron Osten-Sacken, Samuel Williston, J. L. Leconte, C. V. Riley, J. A. Lintner and W. H. Edwards. The Club was incorporated on February 9, 1877. Most of the early meetings were held at Scudder's house, on Brattle St., Cambridge. After 1900 the group met at either the Boston Society of Natural History building or the Appalachian Mountain Club rooms. Subsequent to the appointment of W. M. Wheeler at Harvard University in 1910, the meetings have been held at one of the University's buildings—the Bussey Institution until 1931, and the Biological Laboratories from then until the present time. The 75th Anniversary Meeting will be the 647th meeting since the formation of the Club. Psyche is now in its 56th volume.—F. M. CARPENTER.

ACANTHEPEIRA VENUSTA (BANKS) (ARANEÆ)[1]

By Elizabeth B. Bryant

Museum of Comparative Zoology

Among the collection of spiders in the Museum of Comparative Zoology, several specimens including both sexes of *Acanthepeira venusta* (Banks), from various localities in Florida, were identified. The male has never been recognized before, and as the original description was based on a female, a more complete description of both sexes with figures seems desirable.

The genus *Acanthepeira* appears in the list of Arachnida by Marx in Howard's "List of the Invertebrate Fauna of South Carolina" 1883, used for the species *Epeira stellata* Walck., 1805. As Howard's list is quite rare, it is not surprising that the Marx genus has been overlooked. In 1892, McCook proposed the genus *Marxia* for the same species, *Epeira stellata* Walck. The generic description lists few structural characters and is based largely on the marginal tubercles of the abdomen and the width of the clypeus, characters that are shared by other genera of the family. So in 1904, F.O.P.-Cambridge redescribed the genus using more definite characters. This definition has been generally accepted. In 1941, Archer reinstated the generic name, *Acanthepeira* and it has also been recently used by Kaston in the "Spiders of Connecticut," 1948.

Acanthepeira venusta (Banks)

Figures 1–5

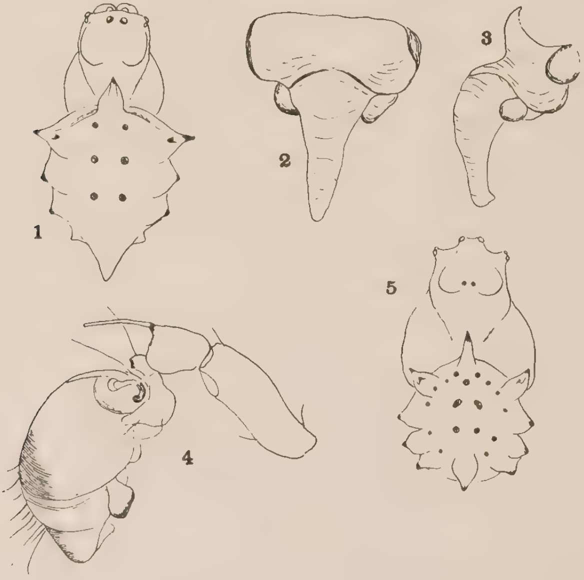
Plectana venusta Banks, 1896, p. 69. "♀ Florida; Punta Gorda."

Female. Length, 6.0 mm., ceph. 3.0 mm. long, 2.2 mm. wide, abd. 4.2 mm. long without the anterior and posterior tubercles, 4.0 mm. wide.

---

[1] Published with a grant from the Museum of Comparative Zoology at Harvard College.

Cephalothorax brown, cephalic portion pale and covered with white hairs, a pair of large circular elevations directly posterior to the eyes, anterior margin wide and truncate; *eyes* in three groups, seen from the front, the anterior row procurved, median eyes carried forward on a small lobe, a.m.e. smaller than the p.m.e., separated by about two diameters, p.m.e. separated by a diameter, lateral eyes subequal on a distinct tubercle at the extreme angle of the carapace; *quadrangle* higher than wide and as wide in front as behind; *clypeus* below the a.m.e. as high as the quadrangle: *mandibles* brown, vertical, fang groove oblique, upper margin with a row of black bristles followed by three teeth, lower margin with four subequal, contiguous teeth, fang short; *labium* wider than long, basal half dark, tip pale; *sternum* lateral margins dark, triangular, one and a half times as long as broad, fourth coxæ touching; *abdomen* pale, with a vague folium on the



Figs. 1–5. *Acanthepeira venusta* (Banks). Fig. 1. Female, dorsal, (type); fig. 2. Epigynum, ventral; fig. 3. Epigynum, lateral; fig. 4. Left palpus, retrolateral; fig. 5. Male, dorsal.

posterior half, with ten tubercles on the margin, each with a corneous tip, the pointed anterior median tubercle extends well over the cephalothorax, the posterior median tubercle blunt and hairy, and the tip darker, as wide at the base as it is long, extends well over the spinnerets, four pairs of graduated lateral tubercles, the largest at the lateral angles, bifid at the tip, the posterior pair very small and not in line with the other pairs, venter infuscate with a pale transverse bar posterior to the epigynum; *legs,* 1-2-4-3, rather short, brown, with darker brown rings, more distinct on the ventral side, spines shorter than the diameter of the joint, no ventral spines on the femora, a dorsal basal spine on III and IV tibiæ; *epigynum,* area longer than wide, a narrow chitinized base, from which projects a slender, graduated fleshy scape, fully twice as long as the chitinized base, tip curled inward, each side of the base a circular opening, with a second smaller opening at the base of the scape.

Male. Length, 6.2 mm., ceph. 4.0 mm. long, 3.4 mm. wide, abd. 3.0 mm. long, 2.9 mm. wide.

Cephalothorax dark brown, broader than in the female and the anterior margin much narrower, many pale hairs in the ocular area, the circular elevations posterior to the eyes more distinct than in the female, with a pair of dark dots close together as figured; *eyes,* median eyes carried forward on a lobe, lateral eyes on distinct tubercles; *mouth parts* and *sternum* as in the female; *abdomen* with the tubercular pattern as in the female, except that the anterior median tubercle is more slender, and the posterior median tubercle is cone-shaped and extends upward at almost right angles to the abdomen, not a longitudinal extension, the muscle spots large and chitinized with numerous small chitinized flecks on the dorsum; *legs,* 1-2-4-3, brown, with darker rings on all joints, legs longer than in the female, with no hook on the first and second coxae, a coniform spur on the fourth coxa, second tibia not incrassate, nor with any specialized spines, spines longer than in the female, a retrolateral row of spines on the fourth femur, with two short chitinized spurs on tubercles near the base; *palpus* not as long as the cephalothorax, patella with one long stout bristle at the tip, tibia not as long as the patella, swollen ventrally, with a long pale, retrolateral process extending dorsally with several long colorless bristles near the tip, paracymbium in two parts, the ventral section small, of the typical form, dark and strongly chitinized and almost touching the tip of the ventral process, the dorsal portion pale, larger, with a recurved tip, the basal part of the cymbium depressed, cymbium not covering all parts, embolus an obscure process near the tip.

Holotype ♀ Florida; Punta Gorda, Banks Coll., no. B.0183. Allotype (by present designation) ♂ Florida; Royal Palm Park, 25–30 March 1927, (Blatchley).

Additional material, not types: 2 ♂s Georgia; Waycross, August 1903, (Morse), Emerton Coll.; ♀ Florida; Coconut Grove, July 1929, (Fairchild); ♂ ♀ Florida; Royal Palm Park, 25–30 March 1927; ♂ ♀ 1–18 April 1927; ♀ 5–17 December 1927, (Blatchley); ♂ ♀ Florida; Dade Co., Paradise Key, from a nest of mud dauber, 23 May 1927 (Dow).

Cambridge had but one species of *Marxia* from Central America when he defined the genus and he states that the species identified as *stellata* from Mexico and Guatemala may not be the same species as figured by Emerton in the Epeiridæ of New England, 1884.

Acanthepeira venusta differs from the generic description as given by Cambridge in three structural characters. The p.m.e. are larger than the a.m.e.; the quadrangle is as wide behind as in front, and it is distinctly longer than wide; the lower margin of the fang groove has four teeth.

The males of *A. venusta* can be separated from *A. stellata* by the narrower abdomen with the terminal tubercle turned upward, the much narrower ventral apophysis on the tibia of the palpus and the paracymbium. The females can be separated from *A. stellata* by the narrower abdomen and the epigynum.

REFERENCES

Archer, Allan F.

1941. The Argiopidæ or Orb-weaving Spiders of Alabama. Geol. Surv. Alabama, Mus. Pap., no. 14, pp. 1–77.

Banks, N.

1896. New North American spiders and mites. Trans. Amer. Ent. Soc., 23, pp. 57–77.

Cambridge, F. O. P.

1897–1905. Arachnida, Araneida. Biologia Central Americana. 2, pp. 1–610, 54 pls.

Emerton, J. H.

1884. New England Spiders of the family Epeiridæ. Trans. Conn. Acad., 6, pp. 295–342, pls. 33–40.

Kaston, B. J.

1948. Spiders of Connecticut. State Geol. and Nat. Hist. Surv., Bull. no. 70, pp. 1–874, includ. 114 pls.

Marx, George

1883. Howard's List of the Invertebrate Fauna of South Carolina. Order Araneina, Chap. XI, pp. 21–26.

McCook, H. C.

1889–1894. American Spiders and their Spinning Work. 3, pp. 1–406, pls. 1–30.

Walckenaer, Charles Athan, Baron de

1805. Tableau des Aranéides. Paris, xii + 88 pages, 9 pls.

1847. Histoire naturelle des Insectes Aptères. vol. 2.

FURTHER DESCRIPTION OF *POLYPLAX ALASKENSIS* EWING (ANOPLURA)[1]

By W. B. Quay

Biological Laboratories, Harvard University

Polyplax alaskensis was first described by H. E. Ewing (1927, Proc. Ent. Soc. Wash., 29: 118–121) from a single male taken from a mouse, *Microtus* sp., in Alaska. No subsequent collecting records of this species have been found in the literature. During the summer of 1948 a large series of individuals of both sexes was secured from mice, *Microtus o. operarius* (Nelson), collected on the Seward Peninsula by the writer. Since the original description is brief and unfigured, I am including here a further description of the species based on the numerous specimens now at hand.

Acknowledgments are made to J. C. Bequaert of the Museum of Comparative Zoology and to Floyd G. Werner of the Harvard Biological Laboratories for aid and advice. I am also very grateful to C. F. W. Muesebeck of the Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, for corroborating the identification by comparing a specimen from my series with the type.

Female (Fig. 1, A). Length 1.2–1.4 mm. *Head* almost as broad as long and generally similar to that of *spinulosa;* first antenna joint much longer than the others and set close to the anterior margin. *Thorax* dorsally similar to that of *spinulosa;* ventrally, the sternal plate is longer than it is broad; the anterior lateral margins are nearly parallel; the posterior lateral margins are concave and slope to a blunt point; the legs, of usual form, are of increasing size posteriorly.

Pleural plates: (Fig. 2, B) first pleurite elongate, faintly if at all chitinized medially and usually with three setæ anteriorly on the ventral lobe, and one anteriorly on the dorsal lobe; the ventral marginal seta of the first pleurite is usually more than twice the length of the dorsal seta and may approach the length of the pleurite itself; second pleurite, elongate and attenuated anteriorly, the ventral marginal seta exceeds the dorsal in length and is usually about half the length of the pleurite; third pleurite, elongate and attenuated anteriorly, with the spiracle barely inclosed by the ventral margin, and with the dorsal marginal seta the same length as that of the second pleurite but longer than the ventral marginal seta of its own pleurite; the spiracles of the third to seventh pleurites are uniformly large and are progressively more centrally

---

[1] Published with a grant from the Museum of Comparative Zoology at Harvard College.

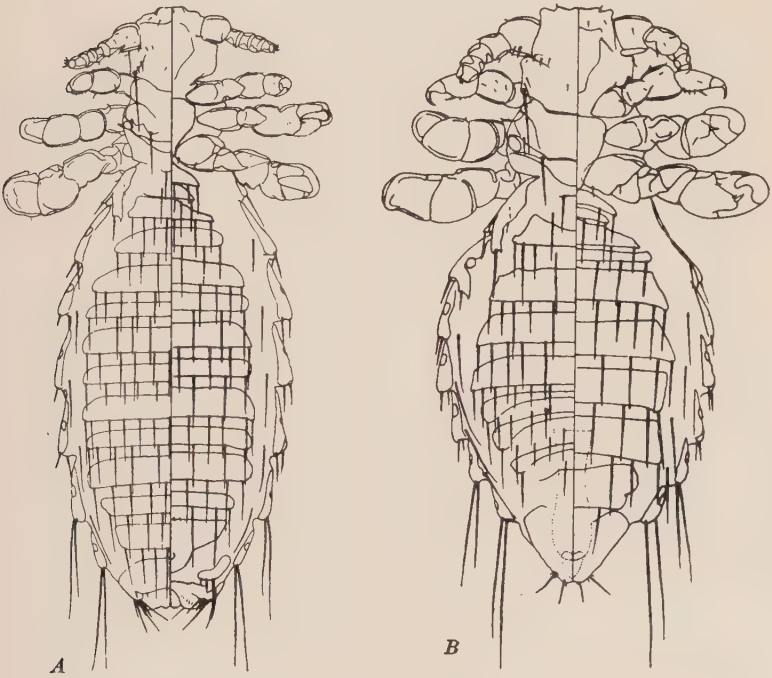


Figure 1. *Polyplax alaskensis.* A. Female. B. Male.

located; pleurites four and five are less elongate and are progressively less attenuated anteriorly, the dorsal marginal setæ are longer than the ventral; pleurite six is narrow and tapers anteriorly; the seventh pleurite is narrow and very blunt anteriorly; in the sixth and seventh pleurites the chitinized area at the base of the marginal setæ is progressively more isolated from the anterior and major portion of the pleurite, and the marginal setæ are greatly elongated, the ventral ones being somewhat longer than the dorsal.

Tergal and *sternal* plates of the abdomen are well chitinized and cover most of the surface area, the anterior plate of each segment tending to be larger than the posterior; on their posterior margins most of the tergites have from eight to thirteen setæ and most of the sternites have from six to ten; however, there is considerable variation in these numbers. The first abdominal sternite is much wider than the second, is pointed anteriorly and concave posteriorly; the second abdominal sternite is almost a half circle; the third is more than twice the width of the second and has a pointed anterior margin. Between the ends of the posterior plate and the corresponding pleurite on the fourth to seventh segments dorsally and the third to seventh ventrally, there is a single seta of moderate length. Ventral to and parallel with the posterior margin of the seventh pleurite, a small plate, bearing three setæ on the posterior margin, has a lobe directed anteriorly from its lateral half.

MALE (Fig. 1, B). Length 0.8–1.0 mm. As described by Ewing, except for the following modifications and additions. Sternum usually longer than it is broad and may sometimes overlap the second and third coxæ.

Tergal and sternal plates of the abdomen are well developed. The first large tergite is usually strongly concave and irregular along its anterior border; the second, third, and fourth tergites progressively increase in length and are convex anteriorly; the fifth, sixth, and seventh tergites are progressively reduced in size and only in a narrow zone near their anterior margins are they strongly chitinized. First three sternites are strongly convex anteriorly and are quite long; the third is much longer than the other two and the central area of its anterior margin is produced into a pointed lobe limited laterally by the base of a large seta; the greatest length of the third sternite distinctly exceeds that of the fourth and is about half that of the following four sternites; all five have roughly parallel and straight anterior and posterior borders.

Genitalia (Fig. 2, A) as described by Ewing and figured here.

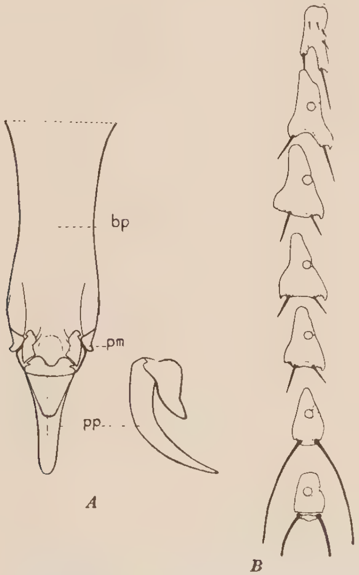


Figure 2. *Polyplax alaskensis.* A. Genitalia of males: bp, basal plate; pm, parameres; pp, pseudopenis (also shown in oblique view). B. Pleural plates of female (setæ of the sixth and seventh are abbreviated).

Specimens examined: twenty-four of both sexes and different ages, collected at Cloud Lake (near Asses Ears), Seward Peninsula, Alaska, July 27, 1948. Representative specimens have been deposited in the collections of the Museum of Comparative Zoology and the National Museum.

A NEW AFRICAN MILLIPED OBSERVED IN MIGRATION

By Ralph V. Chamberlin

University of Utah

The mass migration of millipeds is a phenomenon that has been observed in species of various families of Julida, Spirobolida and Polydesmida. The phenomenon has never been adequately studied or explained. To the list of those observed in such migration may now be added an African member of the Spirostreptida, herein first named and described. Dr. Neal A. Weber, who collected specimens and submitted them to me for identification, supplies the following on the occurrence and behavior of this form as he noted them in the field:

"The animals were discovered Mar. 2, 1948 at the junction of the Vele and Bomokandi Rivers, Lat. 3°38″ N. and Long. 26°8″ E. There were thousands milling about at the river's edge and many had crawled into the river and drowned. There were at least 500 millipeds in one place hanging on a nearly vertical slope of the river bank. In an area of a hundred square meters there were at least 5,000 or that order of magnitude and they were spread over about 150 meters along the river's edge. The air temperature was 89.5° F. Eight kilometers away a few of the same animals were to be found as well as smaller numbers between that point and the river. This was the time approaching the end of the dry season, and it may well be that the population had gradually built up to this peak and migration ensued. There were no animals preying on these and no obvious cause impelling their migration in this direction and into the river where they drowned. The land was not flooded back of this area."

Zantekius, new genus

A genus of the Spirostreptidæ related to *Mardonius* and *Eumekius* of Central Africa and Madagascar. Spiracles beginning on the sixth segment. Metazonites without trace of longitudinal keels, being smooth above and striate below. Anal valves not spined. In the posterior gonopods of the male the coxa without trace of spines and set off distinctly from the telopodite; telopodite long and slender, not at all laminate and entirely without lobes or branches. The inner lamina of the anterior gonopods much produced distad, presenting on the outside at level of the gonocoel a lobe directed proximad and on mesal side near distal end a large T-shaped lobe with one arm directed distad and the other proximad.

Generotype: *Zantekius weberi,* new species.

This genus differs from *Mardonius* in lacking a femoral lobe or spine on the posterior gonopod and from *Eumekius* in having an ectal cone or lobe on the median lamella of the anterior gonopod as well as in having the conspicuous mesal lobe.

Zantekius weberi, new species

Metazonites black about caudal borders, anteriorly more grayish, the last segment entirely gray or grayish brown. Head with face below level of antennæ reddish. Legs and antennæ red, contrasting sharply with the dark body.

Labral excavation very shallow. Labral pits 2–2, the front of head elsewhere smooth, wholly without rugæ. Eyes with inner angles extending mesad a little beyond base of antennæ, the two separated by somewhat more than their transverse length; individual ocelli convex and distinct. Median sulcus across vertex fine, ending in a slightly depressed pit at level of inner angles of eyes. No interocular sulcus evident except faintly for a short distance each side of end of vertigial sulcus. Antennæ reaching to third segment.

Collum moderately narrowing on each side from level of eye ventrad; in the male produced forward at lower anterior corner, with three deep sulci in addition to the margining sulcus as shown in the accompanying figure (Fig. 1A); not produced in the female.

Encircling striæ of prozonites of the other segments fine, mostly about six in number. The surface of the metazonites above and laterally entirely smooth and shining. Each somite with diameter greatest at caudal border, decreasing gradually forward excepting for the moderate depression between prozonite and metazonite. Segmental sulcus fine but sharply defined throughout.

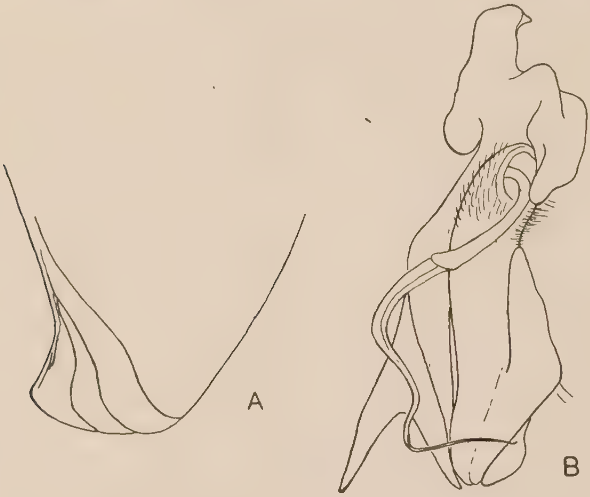


Fig. 1, A. Left side of collum of male. B. Left gonopod of male, with sternite, anterior view.

The usual sharply impressed longitudinal sulci across the metazonite below, the series ending considerably below level of repugnatorial pore. Each pore located well in front of middle of metazonite.

Dorsal line of anal tergite as seen in profile nearly straight. Anal valves distinctly exceeding the tergite; mesal borders strongly elevated. Caudal margin of anal scale weakly obtusely angular.

Ventral pads present on penult and antepenult segments of most of the legs, these pads produced into a short lappet at their distal end beneath the succeeding joint.

The distinctive features of the anterior and posterior gonopods are shown in fig. 1, B.

Type locality: Africa: Belgian Congo, near Bembi, at junction of Vele and Bomokandi Rivers. Mar. 2, 1948. Many specimens collected by Dr. Neal A. Weber.

SOME AMERICAN SALDIDÆ (HEMIPTERA)[1]

By Carl J. Drake
Ames, Iowa

The present paper is based largely upon Saldidæ in the Museum of Comparative Zoology, Harvard University. Some records from the author's private collection are also included. The disposition of types is given beneath the descriptions of new species.

Micracanthia pusilla Van Duzee

Lake Tahoe, Calif., 1 specimen, Aug. 8, 1937, C. J. Drake and Floyd Andre; Ft. Collins, Colo., 1 specimen, May 5, 1898, E. D. Ball; Georgetown, Colo., 7 specimens, July 27, 1898, W. J. Gerhard; Provo, Utah, Aug. 10, 1930, E. D. Ball.

Pentacora bruesi, sp. n.

Plate 14

Small, broadly ovate, blackish, slightly shining, with yellowish brown markings along exterior margins of hemelytra. Head rather broad, black, a narrow crescentric streak along inner margin of each eye and head in front (including callosities) flavous, the ocelli amber; eyes dark, rather large. Antennæ moderately long, moderately hairy; segment I stout, flavous; with a few scattered setæ; II yellowish brown; III and IV dark brown, the last three segments with some scattered long hairs; proportions: I, 20; II, 38; III, 28; IV, 32. Rostrum yellowish brown, extending to hind coxæ. Legs testaceous, sparsely hairy, with scattered brown spots; coxæ becoming dark basally, the front coxal plates largely whitish. Body beneath black, the venter brownish black, the pubescence pale, reclining posteriorly.

Pronotum broad, moderately narrowed anteriorly, three times as wide as long, broadly excavated behind, the

---

[1] Published with a grant from the Museum of Comparative Zoology at Harvard College.

lateral margins a little rounded, with a few short hairs along the edges; front margin rather wide, extending laterally a little beyond the middle of each eye, pubescence yellowish, reclining; callus large, shining, moderately convex, not extending on lateral margins, extending posteriorly beyond middle of pronotum, with large discal impression and a smaller one on each side, the discal impression with deep furrow leading posteriorly to the end of sulcus; transverse sinuate impression separating lobes not very deep, not conspicuously pitted at the bottom; hind lobe indistinctly rugulose, about one-fourth the length of the frontal; sides of pronotum narrowly embrowned along the margins, the sides beneath widely flavous. Scutellum black, slightly shining, slightly rugulose, the transverse impression placed slightly before the middle. Hemelytra brownish black, with six or seven rounded, bluish, sericeous spots on each side, the pubescence yellowish, moderately long, somewhat decumbent, yellowish; clavus dull, grayish black, with a sericeous, yellowish spot before the apex; corium within concolorous with clavus, the rest largely black-fuscous, with five or six pale sericeous spots; embolium, save base, narrowly margined with flavous, the flavous color wider near base and before apex, there extending a little into corium; membrane largely whitish, black within at base, with five cells (only four on right wing, the outer vein being absent) each cell with a small spot before apex, the spots forming together a transverse fuscous streak, the veins dark brown to dark fuscous.

Length, 3.65 mm.; width, 2.00 mm.

Type, female, Matucana, 7,300 ft. elevation, Peru, taken by C. T. Brues, Museum Comparative Zoology No. 28266.

Resembles *Saldula reperta* Uhler in size, color and markings, but stouter and with broader pronotum. *Reperta* has only four cells in membrane. *Salda rubromaculata* Heidemann from Albemarle Island off the coast of Peru has five cells in the membrane and is herewith transferred to the genus *Pentacora* Reuter. The clavus and corium are largely yellow in *rubromaculata*.

The following is a list of the species of the genus *Pen-*

tacora (Reuter, 1912; genotype, *Acanthia signoreti* Guerin) of the Americas:

1.	***angusta*** Drake, 1948	Argentina
2.	***bruesi*** Drake[2], 1949	Peru
3.	***hirta*** (Say), 1932 syn. ***pellita*** (Uhler), 1877	Ind., Iowa, Mass., Conn., Me., Mass., N. Y., Penna., Md., N. C., Miss., Ala., Miss., Tex., Canada (Quebec).
4.	***ligata*** (Say) 1832 syn. ***variegata*** (Prov.), 1872	Me., Mass., N. H., Conn., N. Y., Md., N. J., N. Y., Penna., Ohio, Iowa, Ind., Minn., Nebr., Minn., Ill., Canada (Man., Ont., Que.).
5.	***rubromaculata*** (Heidemann)[2], 1901	Galapagos (Albemarle Is.).
6.	***signoreti*** (Guerin), 1856	Mo., Kan., Colo., Calif., N. H., Mass., N. Y., Md., N. J., Ga., Iowa, Tex., Ala., N. Mex., N. C., S. C., Fla., Mexico, Cuba, Cat and Long Is. (Bahamas), Haiti, Porto Rico, Dom. Rep.
7.	***sphacelata*** (Uhler), 1877	Mass., Conn., N. J., N. Y., Md., Mo., Miss., Tex., Calif., Cat.Is. (Bahamas), Dom. Rep., Cuba.

Saldula sulcata (Barber)

Originally described as *Micracanthia sulcate* Barber, but belongs to the genus *Saldula* Van Duzee. In addition to a paratype from Porto Rico, specimens are at hand from Camp Perrin, British Guiana; Trinidad, B. W. I., Oct. 27, C. J. Drake; Pto. Plata, Dom. Rep., June, 1938, Darlington.

Saldula elongata (Uhler)

Corvallis, Oregon, male, June 26, 1926, C. J. Drake. Distinctly elongate and of a similar color as female, but much smaller in size.

---

[2] The generic position of *P. bruesi* and *P. rubromaculata* (Heidemann) will be discussed in a subsequent paper.

Saldula bassingeri, sp. n.

Small, obovate, clothed with short golden pubescence, blackish, scarcely shining, the hemelytra conspicuously marked with large whitish spots or areas. Tylus and juga yellowish white, ocelli amber. Rostrum dark rufo-fuscous, reaching hind coxae. Antennae shortly hairy, brownish black, the basal segment (save large elliptical fuscous spot beneath) and apical portion of second segment yellowish white; proportions: I, 14; II, 26; III, 20; IV, 18. Legs shortly hairy, testaceous; coxæ black-fuscous, shining; femora beneath (save apices) black-fuscous, somewhat shining, above usually with scattered fuscous spots; tibiæ above dark; tarsi darker at tips. Body beneath blackish, the pubescence pale.

Pronotum black, moderately shining, densely clothed with golden, decumbent pubescence, a little narrower in front than eyes, two and a half times as wide as long, deeply excavated behind, the lateral margins moderately rounded; callus only moderately convex, not reaching lateral margins, with large discal impression; lobes separated by transverse, sinuate impression, pitted at bottom of depression, the front lobe twice as long as posterior. Scutellum moderately convex, moderately shining, subequal in length and width, the pubescence as on pronotum. Hemelytra rather densely clothed with reclining pubescence, with large yellowish or flavous markings on corium, the pubescence reclining; membrane pale, semitransparent, with four cells, the base and an elongate spot in each cell brown, the veins darker brown; clavus blackish, with subapical yellowish spot; inner clavus largely blackish, with three spots along lower edge (one subbasal, one near middle and other apical) yellowish white or yellowish; outer corium largely yellowish or yellowish white, the base, a small spot near middle, a quadrate spot beyond middle and an apical spot blackish; the amount of yellowish white or size or dark spots varies somewhat in different specimens.

Length, 2.90–3.20 mm.; width 1.30–1.50 mm.

Type (male), allotype (female) and 50 paratypes, Riverside, California, Aug. 16, 1937, A. J. Basinger, C. J. Drake and Floyd Andre. Paratypes, San Francisco, 4 specimens, Aug. 11, 1937, collected by Drake and Andre; 2 specimens, Dolores, Colorado, Aug. 16, 1935, C. J. Drake.

Separated from other western *Saldula* Van Duzee by its smaller size and prominent hemelytron markings. When the pubescence is rubbed off, the pronotum is quite shining.

Saldula fernaldi, sp. n.

Moderately large, broad, black, slightly shining, with some brownish markings on hemelytra, the pubescence very short, moderately dense, reclining, golden. Head broad, black, apex and callosities brownish or flavous; ocelli amber. Rostrum dark fuscous, shining, extending to hind coxæ. Antennæ blackish, shortly pilose; largely flavous above, the rest dark fuscous and shining; II brownish apically; proportions: I, 20; II, 40; III, 24; IV, 22. Body beneath black, the pubescence grayish. Legs testaceous, the femora with some dark brown spots.

Pronotum broad, black, slightly shining, broadly roundly excavated behind, moderately narrowed anteriorly, in front a little narrower than head and eyes together, nearly four times as wide as long, the exterior margin slightly rounded; callus moderately raised, not extending on lateral margins, deeply impressed on disc, a little longer than hind lobe; transverse impression behind callus sinuate, moderately deep, pitted at bottom; hind lobe one half as long as frontal. Scutellum black, slightly shining, as wide as long, indistinctly rugulose, the transverse impression near middle. Hemelytra broad, brownish black, dull; clavus with small, brownish subapical spot; corium more or less variable in brownish markings; inner corium with two brownish streaks above middle, a large elongate, circular mark (center dark) in front of middle along lower margin and two or three streaks apically brownish, some times with a very long, narrow, marginal streak, which arises a little behind the base; membrane yellowish brown, basally within and a long streak in each cell dark fuscous, the lighter areas subhyaline, the veins dark.

Length, 4.25 mm.; width, 2.45 mm.

Type (male) and allotype (female), Flower's cove, Newfoundland, Aug. 17, Dr. Fernald. Paratypes, 5 specimens, taken with type. Type, in Mus. Comp. Zool. No. 28267.

This species is much shorter and not as dull as *S. major* (Prov.). It is much broader and differently colored than *S. pallipes* (Fabr.)

Saldula franciscana, sp. n.

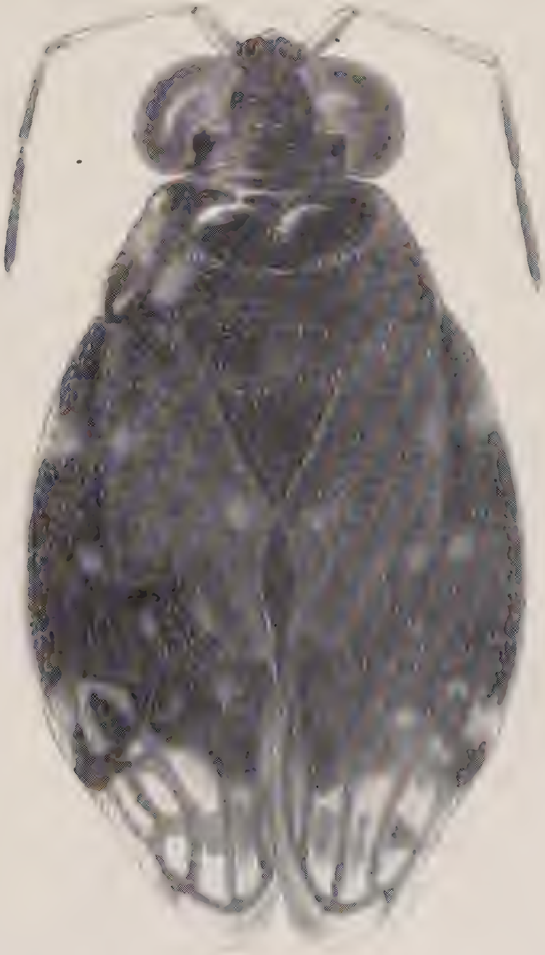
Elongate-ovate, black, shining, with short, rather sparse, golden pubescence, each hemelytron with one (sometimes two) subapical flavous spot. Head polished, with a yellowish spot posteriorly between each ocellus and eye; tylus fuscous-black, polished. Rostrum dark fuscous, reaching to hind coxæ. Antennæ black, moderately stout, shortly pilose, the last two segments with scattered long hairs, second segment above and apical portion of second brownish,—porportions, I, 22; II, 48; III, 30; IV, 32. Body beneath black, with pale pubescence. Leg shortly pilose, mostly brown, or fuscous; coxæ black, polished; femora of fore and middle legs often dark fuscous, all femora towards apex and beneath at base becoming testaceous; tibiæ yellowish to brown, darker basally and apically; tarsi dark apically; middle and hind legs often brown above, beneath on basal half yellowish.

Pronotum highly polished, behind roundly excavated, narrowed anteriorly, the sides practically straight (slightly rounded); callus raised, prominent, with deep, large, discal impression, not extending to lateral margins; lobes divided by a deep, sinuate impression, pitted at bottom of depression, the hind lobe about half as long as frontal; pronotum two and one-half times as wide as long, the callus occupying most of fore lobe. Scutellum moderately convex, subequal in length and width, polished, the transverse impression near the middle. Hemelytra only slightly polished, brownish black, not as black or as polished as pronotum and scutellum, with a moderately large yellowish-white spot on each side a little before the apex of outer corium, the inner corium sometimes with rather indistinct brownish patches; clavus entirely black, without subapical spot; membrane distinct, slightly fumose, hyaline, with four cells, each cell with a brown spot near its middle, the veins dark brown.

Length, 4.00 mm.; width, 1.80 mm.

Type (male) and 3 paratypes, San Francisco, Calif., collected on rocks in a small stream north of the city, Aug. 11, 1937, by C. J. Drake and Floyd Andre. Female is unknown.

This species has a stouter antennæ than the other American members of the genus. The hemelytra are darker in some examples than others. In one paratype, the hemelytra have two spots on each side. *S. franciscana*, sp. n. is much more slender and more shining than *S. lucuosa* Stål. It also lacks the hairy clothing.



Pentacora bruesi Drake

PSYCHE

INDEX TO VOL. 56, 1949

INDEX TO AUTHORS

Brown, W. L., Jr. Synonymic and Other Notes on Formicidæ (Hymenoptera). 41
  A Correction. 69
  A New American *Amblyopone,* with Notes on the Genus (Hymenoptera: Formicidæ). 81
Bryant, E. B. The Male of *Prodidomus rufus* Hentz (Prodidomidæ, Araneæ). 22
  A new Genus and Species of Theridiidæ from Eastern Texas (Araneæ). 66
  Acanthepeira venusta (Banks) (Araneæ). 175
Carpenter, F. M. Seventy-fifth Anniversary of the Cambridge Entomological Club. 174
Chamberlin, R. V. A New African Milliped Observed in Migration. 184
Cheng, F. Y. New Species of Mecoptera from Northwest China. 139
Dinnik, J., and F. Zumpt. The Integumentary Sense Organs of the Larvæ of Rhipicephalinæ (Acarina). 1
Drake, C. J. Some American Saldidæ (Hemiptera). 187
Edwards, R. L. A New *Gruimenopon* (Mallophaga-Menoponidæ). 116
Emerson, K. C. North American Menoponidæ (Mallophaga). III; Notes on Some of Kellogg's Types. 89
Fennah, R. G. On a Small Collection of Fulgoroidea (Homoptera) from the Virgin Islands. 51
Frost, C. A. *Tritoma dissimulator* Crotch. 115
Gregg, R. E. A Note on *Pheidole* (*Macropheidole*) *rhea* Wheeler (Hymenoptera: Formicidæ). 70
Hull, F. M. Some Flies of the Genus *Volucella* from the New World. 26
  New American Syrphid Flies of the Subfamily Eristalinæ. 120
Quay, W. B. Further Description of *Polyplax alaskensis* Ewing (Anoplura). 180
Smith, M. R. On the Status of *Cryptocerus* Latreille and *Cephalotes* Latreille (Hymenoptera: Formicidæ). 18
  A New *Leptothorax* Commonly Inhabiting the Canyon Live Oak of California (Hymenoptera: Formicidæ). 112
Werner, F. G. *Epicauta diversicornis* and its Allies in the Neotropical Region (Coleop., Meloidæ), 74
  Additions to *Epicauta,* with New Synonymy and a Change of Names (Coleoptera: Meloidæ). 93
Wesson, L. G., Jr. *Strumigenys venatrix* Wesson and Wesson Synonymous with *S. talpa* Weber. 21

INDEX TO SUBJECTS

All new genera, new species and new names are printed in LARGE AND SMALL CAPITAL TYPE.

Acanalonia depressa, 59
Acanathepeira venusta (Banks) (Araneæ), 175
Acarina, 1
Additions to *Epicauta,* with New Synonymy and a Change of Names (Coleoptera: Meloidæ), 93
Amaclardea gowdeyi, 58
Amblyopone (*Stigmatomma*) *pallipes,* 84
Amblyopone (*Stigmatomma*) *subterranea,* 85
Amblyopone (*Stigmatomma*) TRIGONIGNATHA, 81
A New African Milliped Observed in Migration, 184
A New American *Amblyopone,* with Notes on the Genus (Hymenoptera: Formicidæ), 81
A New Genus and Species of Theridiidæ from Eastern Texas (Araneæ), 66
A New *Gruimenopon* (Mallophaga-Menoponidæ), 116
A New *Leptothorax* Commonly Inhabiting the Canyon Live Oak of California (Hymenoptera: Formicidæ), 112
Anoplura, 180
A Note on *Pheidole,* (*Macropheidole*) *rhea* Wheeler (Hymenoptera: Formicidæ), 70
Aphænogaster fulva, 49
Araneæ, 22, 66, 175

Bittacus PLANUS, 158
Bothriocera eborea, 53

Cambridge Entomological Club, Seventy-fifth Anniversary, 174
Cephalotes, 18
Cixiidæ, 52
Colgorma diluta, 59
Crematogaster lineolata, 47
Crematogaster vermiculata, 48
Cryptocerus, 18
Cubana tortriciformis, 52

Delphacidæ, 53
Diplopoda, 184

Epicauta AFOVEATA, 103
Epicauta BISPINOSA, 95
Epicauta cinerea, 99
Epicauta diversicornis and its Allies in the Neotropical Region (Coleop., Meloidæ), 74
Epicauta FICTA, 100
Epicauta hirsutipubescens, 110
Epicauta impressifrons, 105
Epicauta ISTHMICA, 77
Epicauta lauta ROSSI, 108
Epicauta OCCIPITALIS, 106
Epicauta PESTIFERA, 100
Epicauta SENILIS, 102
Epicauta TENEBROSA, 93
Epicauta virgulata, 108
Eristalis CLARIPENNIS, 123
Eristalis CORA, 121
Eristalis VERA, 120

Flatidæ, 61
Formicidæ, 18, 21, 41, 69, 70, 81, 112
Fulgoroidea from the Virgin Islands, 51
Further Description of *Polyplax alaskensis* Ewing (Anoplura), 180

Gruimenopon CANADENSUM, 116

HARNEDIA, 20
Hemiptera, 187
Homoptera, 51

Issidæ, 60

Ladella pallida, 56
Leptothorax (*Leptothorax*) GALLÆ, 112

Macropheidole, 70
Mallota INTERMEDIA, 125
Mecoptera, 139
Meloidæ 74, 93
Melormenis quadripunctata, 63
Menoponidæ, 89, 116
Meromacrus FLAVOLINEA, 131
Meromacrus MATILDA, 127
Meromacrus VILLOSA, 129
Micracanthia pusilla, 187
MUFILA TEXANA, 66, 67
Myrmecina americana, 44

Neopanorpa CHOUI, 151
Neopanorpa HEII, 152
Neopanorpa LATIPENNIS, 156
Neopanorpa TAOI, 155
Neopanorpa VALIDIPENNIS, 154
Neopanorpa VARIA, 157
Neurotmeta viridis, 58
New American Syrphid Flies of the Subfamily Eristalinæ, 120
New Species of Mecoptera from Northwest China, 139
North American Menoponidæ (Mallophaga). III; Notes on some of Kellogg's Types, 89
Novomessor albisetosus, 49

Oliarus campestris, 53
On a Small Collection of Fulgoroidea Homoptera) from the Virgin Islands, 51
On the Status of *Cryptocerus* Latreille and *Cephalotes* Latreille (Hymenoptera: Formicidæ), 18

Panorpa BONIS, 150
Panorpa EMARGINATA, 140
Panorpa FRUCTA, 144
Panorpa LEEI, 147
Panorpa OBTUSA, 142
Panorpa PUSILLA, 149
Panorpa SEMIFASCIATA, 146
Panorpa SEXSPINOSA, 145
Panorpa STATURA, 148
Panorpa TYPICOIDES, 143
PARTHENORMENIS SANCTAE-URSULAE, 61, 62
Pentacora BRUESI, 187
Petrusa marginata, 63
Pheidole (*Macropheidole*) *rhea*, 70
Polyplax alaskensis, 180
Prodidomus rufus, 22
Pseudomyrma alliodorœ, 42
Pseudomyrma belti bequaerti, 42
Pseudomyrma belti saffordi, 42
Pseudomyrma belti venifica, 42
Pseudomyrma gracilis, 43
Pseudomyrma latinoda bradleyi, 42
Pseudomyrma latinoda coronata, 42
Pseudomyrma sericea acaciarum, 43
Pseudomyrma spinicola infernalis, 43, 69
Pseudomyrma spinicola scelerosa, 43, 69
Pseudomyrma triplaridis baileyi, 43
Pseudomyrma triplaridis boxi, 43
Pseudomyrma triplarina, 44

Quichuana NIGRA, 133
Quichuana URSALA, 136

Rhipicephalinæ, 1

Saldidæ, 187
Saldula BASSINGERI, 190
Saldula elongata, 189
Saldula FERNALDI, 191
Salldula FRANCISCANA, 192
Saldula sulcata, 189
Sense Organs of Larvæ of Rhipicephalinæ, 1
Sogata furcifera, 53
Some American Saldidæ (Hemiptera), 187
Some Flies of the Genus *Volucella* from the New World, 26
Strumigenys talpa, 21
Strumigenys venatrix Wesson and Wesson Synonymous with *S. talpa* Weber, 21
Synonymic and other Notes on Formicidæ (Hymenoptera), 41
Syrphid Flies, 26, 120

Tangella schaumi, 57
Tangiopsis tetrastichus, 59
Tangyria frontalis, 57
Tetramorium cæspitum, 47
The Integumentary Sense Organs of the Larvæ of Rhipicephalinæ (Acarina), 1
The Male of *Prodidomus rufus* Hentz (Prodidomidæ, Araneæ), 22
Theridiidæ, 66
Thionia ARGO, 60
Tritoma dissimulator, 115
Tropiduchidæ, 53

Volucella IMPRESSA, 30
Volucella LIRIOPE, 28
Volucella NIGROPODA, 35
Volucella PALMYRA, 33
Volucella SCINTILLANS, 39
Volucella STIGMATA, 37
Volucella TRIPUNCTATA, 31

ZANTEKIUS WEBERI, 184, 185

CAMBRIDGE ENTOMOLOGICAL CLUB

A regular meeting of the Club is held on the second Tuesday of each month (July, August and September, excepted) at 8:00 p.m. in Room B-455, Biological Laboratories, Divinity Ave., Cambridge. Entomologists visiting Boston are cordially invited to attend.

FOR SALE

The Librarian of the Museum of Comparative Zoology is offering for sale a limited number of incomplete sets of the "CONTRIBUTIONS FROM THE ENTOMOLOGICAL LABORATORY OF THE BUSSEY INSTITUTION."

At present, there are six volumes available of the original eight. Each of these sets includes reprints of about 200 entomological papers which appeared in various entomological and zoological journals published during the period from 1909 to 1929. All but one of the volumes are bound in red buckram. They are priced at $10.00 for the set of six volumes, or $2.00 for a single volume, f.o.b., Cambridge, Massachusetts.

Orders should be addressed to the Librarian, Museum of Comparative Zoology, Harvard University, Cambridge, Mass.

The Cambridge Entomological Club has for sale reprints of articles published in PSYCHE between 1910 and 1920. A list of articles available can be obtained from the Editorial Office of PSYCHE, Biological Laboratories, Divinity Ave., Cambridge, Mass.

BACK VOLUMES OF PSYCHE

The Cambridge Entomological Club is able to offer for sale the following volumes of Psyche. Those not mentioned are entirely out of print.

Volumes 2, 3, 4, 5, 6, 7, 8, 9, each covering a period of three years, $5.00 each.

Volumes 10, 12, 14, 17, each covering a single year, $1.00 each.

Volumes 18, 19, 20, 21, 22, 23, 24, 25, 26, each covering a single year, $1.50 each.

Volumes 27 to 53, each covering a single year, $2.00.

Volumes 54 and 55, each covering a single year, $3.00.

Orders for 2 or more volumes subject to a discount of 10%.

Orders for 10 or more volumes subject to a discount of 20%.

All orders should be addressed to

F. M. Carpenter, Editor of Psyche,
Biological Laboratories,
Harvard University,
Cambridge, Mass.